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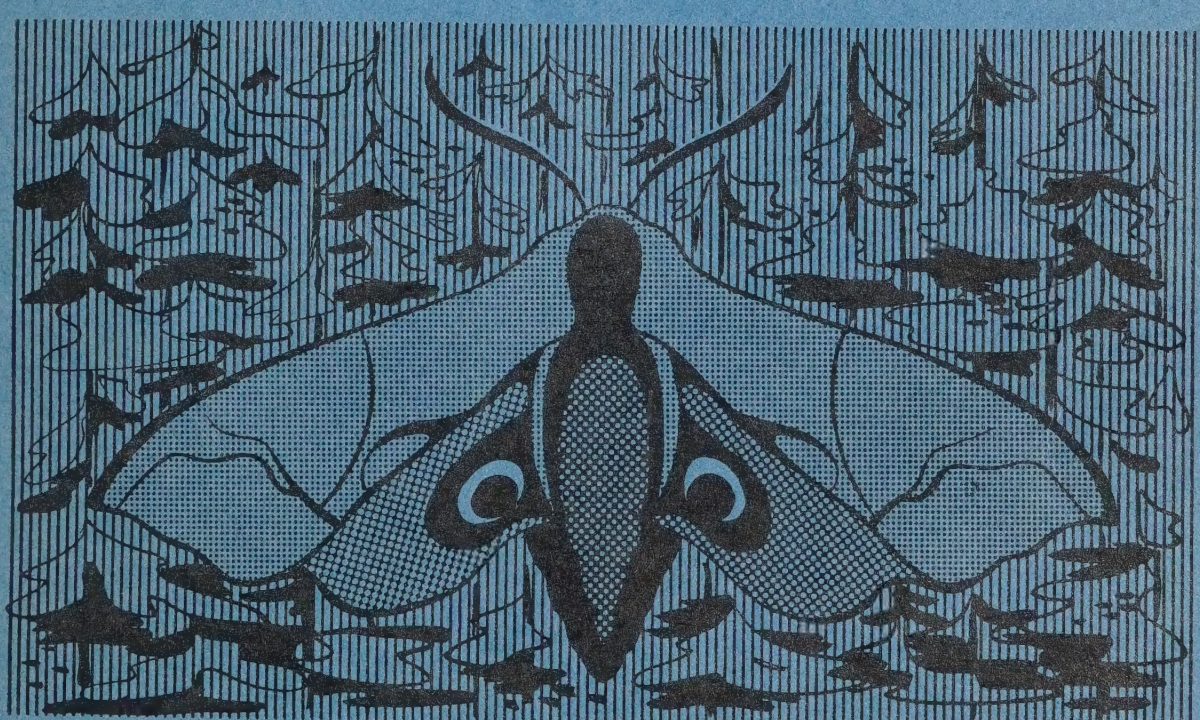
Forest lepidoptera of Canada.
v.1.

FOREST LEPIDOPTERA OF CANADA

Recorded by the Forest Insect Survey

Volume I

Papilionidae to Arctiidae



CANADA DEPARTMENT OF AGRICULTURE

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FOREST LEPIDOPTERA OF CANADA

RECORDED BY THE FOREST INSECT SURVEY

VOLUME I—PAPILIONIDAE TO ARCTIIDAE

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ACKNOWLEDGEMENT

The efforts of many persons have been necessary for the preparation of this compilation although the officers listed on the title page must accept full responsibility for its contents. The information about forest Lepidoptera of Canada contained in the publication results from a careful review and collation of Forest Insect Survey records. For the most part, these records were based on collections submitted by Forest Biology rangers and many co-operators representing provincial governments and woods industries.

We have received considerable assistance and constructive criticism from a number of persons and agencies outside of the Forest Biology Division. In particular we would like to thank the Lepidoptera Section of the Insect Systematics and Biological Control Unit, Entomology Division who assisted with the nomenclature and arrangement of the insect species treated.

We are indebted to the Bureau of Entomology, Quebec Department of Lands and Forests, for permission to examine specimens and use records of the occurrence of forest insects in Quebec.

B. M. McGUGAN,
Co-ordinator, Forest Insect and Disease Survey.

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FOREST LEPIDOPTERA OF CANADA

Recorded by the Forest Insect Survey

INTRODUCTION

This compilation presents the available data on distribution, hosts, feeding habits, general abundance, and seasonal history of the species of Lepidoptera that have been handled by the Canadian Forest Insect Survey. The Survey has developed since 1936 and is one of the important projects of the Forest Biology Division, Science Service, Canada Department of Agriculture. The basic objective has been to detect, report and, to a limited degree, forecast the occurrence of forest insects causing damage to Canadian forests. The methods developed provided a means of accumulating data on forest insects generally. However, the Survey has not functioned simply as a faunal survey and the intensity and methods of coverage have varied considerably from one region of Canada to another. For these reasons a general appreciation of the history and methods of the Forest Insect Survey is necessary to a full understanding of the data contained in these volumes. The Survey has been described in some detail by McGugan[1] and only a summary of the main features will precede a description of the contents and format of this compilation.

The Forest Insect Survey was inaugurated in 1936 in eastern Canada as a result of the severe outbreak of European spruce sawfly. Coverage was rapidly developed until, by 1940, the more accessible forested areas of Canada were covered from regional centers at Fredericton, N.B.; Ottawa, Ont.; Winnipeg, Man.; Indian Head, Sask.; and Vernon, B.C. In the postwar years, Survey organizations were developed at Corner Brook, Nfld.; Truro, N.S.; Quebec, P.Q.; Sault Ste. Marie, Ont.; Calgary, Alta.; and Victoria, B.C. The Ottawa and Indian Head units were disbanded and the units at Sault Ste. Marie, Winnipeg, and Calgary correspondingly strengthened. Although the Survey has emphasized the detection and appraisal aspects, the importance of ascertaining the identity, habits, and natural control factors for all insects found on forest trees has also been recognized. An understanding of the insect fauna as a whole has been considered a necessary step toward a full appreciation of the relatively small number of species that cause serious economic damage. The pursuit of these long-term objectives has provided much of the data appearing in this publication.

The detection and appraisal information of the Forest Insect Survey is made available in a variety of forms; the most widely distributed and best known is the annual report[2] summarizing insect and disease conditions. Numerous research studies conducted by Survey officers have appeared in technical journals, but only limited efforts have been made to present the great accumulation of data derived from the general collecting and rearing program of the Forest Insect Survey. The only direct uses of this fund of data have been the review of insects

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[1] McGugan, B.M. The Canadian Forest Insect Survey, Proc. X Inter. Cong. of Ent. In press.

[2] Annual Reports of the Forest Insect and Disease Survey, 1939-57. Published by the Forest Biology Division, Department of Agriculture, Ottawa, Canada.

found on spruce by Brown[3], and tabulations of forest Lepidoptera and sawflies of southern Ontario by Raizenne[4, 5]. As the volume of Survey records increased, some means of rapidly handling data was a necessary step to the preparation of comprehensive treatments. In 1952, a punch card system was introduced for recording pertinent information from Survey collections and has greatly facilitated the preparation of this first national compilation.

More detailed studies of the more common species are planned to follow the present series of volumes. Presentation will be by tree species or ecological group rather than by taxonomic units and will include all available information on the biology of the species and their control agents.

The data contained in this report are based on the large volume of field collections of immature stages of insects found on forest trees. During recent years, nearly 25,000 collections have been processed annually, with more than two thirds of these resulting from the directed efforts of a staff of 70 Forest Biology rangers. The remaining collections came from a wide variety of co-operators and have provided much valuable information over the years. Many such persons have received collecting instructions from the Forest Biology rangers.

The most common collection techniques used are hand picking and beating. The beating of trees or branches over a sheet has been a standard technique for following the distribution and relative abundance of many defoliators, particularly at low population levels. When insects are more abundant and the damage conspicuous, collections are usually made by direct hand picking or by removing sample branches with a pole pruner and net. Specialized methods adapted to certain insects are becoming more common and are important when population levels and natural controls are under special study.

The specimens are shipped to the regional laboratory with an enclosure slip for recording the date, collector, location, description of the host trees, collection method, details of the site, and stand characteristics. At the regional laboratory, the insects are identified as completely as possible and those immature stages for which determinations are not certain or from which special data are needed are reared to the adult stage. All unknown or doubtful adult material as well as a selection of material from the better known species is forwarded to the Insect Systematics and Biological Control Unit of the Entomology Division for confirmation or authoritative identification. When these determinations are obtained, the completed Survey records include the original enclosure slip, a punch card containing all essential data from the enclosure slip and pertinent rearing information, rearing sheets, and pinned adult specimens.

The present compilation has been drawn largely from the data on punch cards with reference back to the original forms whenever necessary and to various older records. Changes in taxonomic concepts during the past 20 years

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[3] Brown, A. W. A. Foliage insects of spruce. Pub. 712, Tech. Bull. 31, Dept. of Agriculture, Ottawa, Canada, 1941.

[4] Raizenne, H. A. Forest Lepidoptera of southern Ontario and their parasites. Forest Biology Division, Canada Dept. of Agriculture. Mimeo. 1952.

[5] Raizenne, H. A. Forest sawflies of southern Ontario and their parasites. Pub. 1009, Dept. of Agriculture, Ottawa, Canada, 1957.

have been many and whenever confusion seemed possible, all available specimens were resubmitted to the Insect Systematics Unit for careful review.

The information contained in this volume and those to follow does not approach a complete listing of all Lepidoptera found on forest trees in Canada. The considerable bias in operating procedures, forced by the detection aspects of the Survey, has produced greater emphasis on insects that reach outbreak proportions and on tree species utilized by forest industries. Definite efforts have been made, however, to record any noticeable insect damage regardless of the tree species or location; as time and conditions have permitted, less important tree species have been scrutinized.

Over a period of time, these somewhat coarse methods should yield rather complete information on the insect fauna of Canadian trees. This objective is still far from being reached when all insect types are considered. The myriads of leaf miners, gall formers, sap feeders, and borers of all types have been largely ignored. The abundance and relative ease with which the more conspicuous defoliators can be observed, collected, and reared has produced a wealth of valuable data on these important insect groups. The lack of even preliminary lists of the Canadian insect fauna for most Orders has been pointed out on numerous occasions[6, 7, 8]. It is our hope that the present compilation dealing with a portion of the Lepidoptera will prove a valuable contribution to Canadian entomological literature.

A few comments on the methods employed in bringing together the present compilation are in order. As indicated above, the Survey is organized on a regional basis as shown in Figure 1. The assimilation of regional data for the Atlantic Provinces as a whole was undertaken by the Fredericton Laboratory; the Newfoundland regional unit was developed only recently. The general purpose and methods to be followed in the compilation were conceived at a conference of senior Survey officers held in Ottawa in 1955. Under the guidance of the Survey Co-ordinator, the detailed compilation methods were evolved, and each regional laboratory became fully responsible for preparing and checking all records pertaining to their region. When submitted on standards forms, the data were integrated on a national scale and the final manuscript prepared. The manuscript was reviewed by senior Survey officers to ensure that national integration had not produced any errors or omissions and by the Lepidoptera Section of the Insect Systematics and Biological Control Unit. In addition to many valuable criticisms and comments, the latter group ensured that the nomenclature was consistent with currently accepted views.

The present volume includes 82 species in the families Papilionidae to Arctiidae. The rest of the Noctuoidea will appear in a second volume and the remainder of the Macrolepidoptera in a third volume. The Microlepidoptera may require two additional volumes. All species listed are considered native to the areas designated unless otherwise stated.

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[6] Munroe, E. G. Canada as an environment for insects. Can. Ent. 88 : 7, 372-476, 1956.

[7] van Emden, F. I. My impressions of systematic entomology in Canada. Can. Dept. Agr. Ent. Div. News-Letter 35 (1) : 1-2, proc. 1957.

[8] Bigelow, R. S. Why not more handbooks on insects? Can. Dept. Agric. Ent. Div. News-Letter 35(4) : 1-2, proc. 1957.

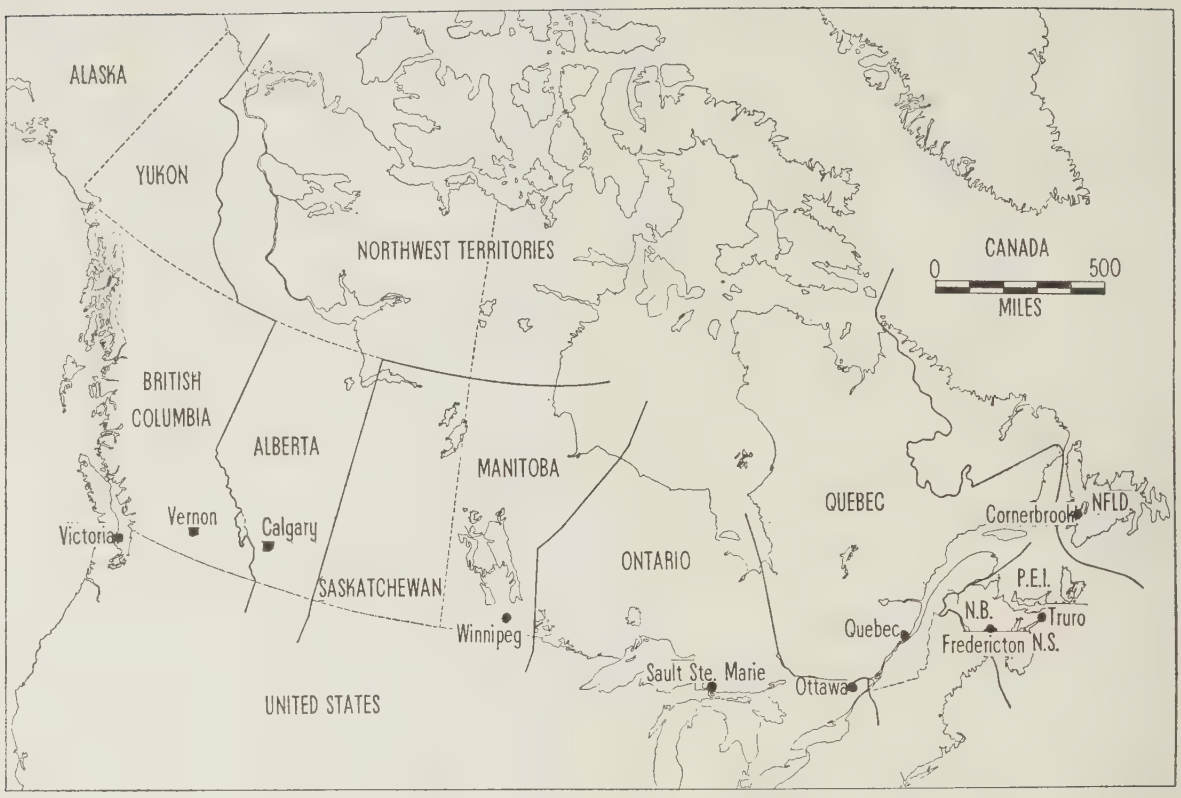

Figure 1. The regional organization of the Canadian Forest Insect Survey and the location of laboratories.

The Format and Contents of the Checklist

A semi-tabular form has been followed to present data on the distribution, hosts, feeding habits, general abundance, and seasonal history of each species. The format has been kept as uniform as possible, consistent with disparities in the amount of available data for different species. A few comments on how the data were integrated and on the method of presentation will allow an easier and better understanding.

Nomenclature and Arrangement

The technical designations are based on recommendations of the officers of the Lepidoptera Section of the Insect Systematics and Biological Control Unit of the Entomology Division. Drs. T. N. Freeman, D. F. Hardwick, and E. G. Munroe have determined over the years a large proportion of the lepidopterous material on which the compilation is based. They have also re-examined doubtful groups, reviewed data during their integration, and examined the manuscript. Beyond the insect nomenclature used, however, they have no basic responsibility for the contents of the checklist; this rests with the senior officers of the Forest Insect Survey. Common names have been used sparingly and follow closely the recommendation of the Entomological Society of America.[9]

[9] Common names of insects approved by the Entomological Society of America. Bull. Ent. Soc. of Amer. Volume 1, No. 4, Dec. 1955.

The systematic arrangement followed is essentially that published by McDunnough.[10] Variations imposed by more recent descriptions and alterations are consistent with the arrangement of the Canadian National Collection. Species have been numbered consecutively solely to simplify the preparation and use of the index to host trees.

Distribution

The extensive distributional data represent one of the major contributions of this checklist. Records for species vary from single observations to many thousands of collections. In general, such variation reflects the relative abundance of the species although the number of Survey records may be influenced by a variety of factors such as the inconspicuous damage produced by many species, the selection of species for special study by Survey officers, and the vagaries of collectors. Despite these intangible influences, the number of records for a species and the constancy with which they occur do indicate how frequently larval feeding is noted by trained observers. Disparities between light-trap and adult-flight records and collections of immature stages are often very striking. Species which are regularly taken as adults are sometimes poorly represented in Survey records and occasionally the opposite condition occurs.

The data on distribution are limited to the area regularly covered by the Forest Insect Survey. Only the more accessible sections of the major regions (Figure 1) are sub-divided into ranger districts. Individual rangers are responsible for Survey activities within these districts which vary greatly in size and travel conditions (see Fig. 2).

Coverage of entire districts is attempted for major insect problems but the intensity varies considerably, depending on the accessibility of forest stands. Although considerable use is made of water and air travel beyond the limits of motor roads, the disparity in coverage between districts in southern Ontario and northern British Columbia, for example, is still immense. Travel is concentrated in the more accessible areas of Canadian forests; excursions into areas beyond the limits of organized fire protection and standard means of transportation are difficult and time-consuming. Occasional flights have been made beyond the limits of the organized districts in northern Ontario and annual trips have been made up the Alaska Highway in recent years. Increased interest in the resources of the Northwest Territories has led to regular coverage of forests along the main waterways.

It is against the background of these economic and physical limitations that the distributional data should be evaluated. Records of the Canadian National Collection, based largely on the results of the Northern Insect Survey[11], would greatly extend the northern boundaries of many of the illustrated distributions. It is hoped that with the present information at hand, systematists can perhaps look toward an annotated list of Canadian Lepidoptera that would extend beyond forest species and include all sources of information.

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[10] McDunnough, J. Check-list of the Lepidoptera of Canada and the United States of America. Memoirs S. Calif. Acad. Sci. Vol. 1, 1938 and Vol. 2, No. 1, 1939.

[11] Freeman, T. N. The northern insect survey and some environmental observations. Ann. Rept. Ent. Soc. of Ont. 1949, 3 pp., 1950.

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Figure 2. The general boundaries of Forest Biology ranger districts. The dots in some districts indicate the location of permanent ranger headquarters.

Another unfortunate deficiency in the distributional data of the Forest Insect Survey is the lack of comparable information for the Province of Quebec. The many abrupt changes in distribution that coincide with Quebec provincial boundaries are artifacts. A Forest Insect Survey organized under the direction of the Quebec Department of Lands and Forests has been in operation since 1939. The objectives and procedures of this organization have not been the same as those of the Canadian Forest Insect Survey. Large amounts of data have been collected for a relatively few important species; otherwise coverage has been fragmentary. Officials of the Quebec Bureau of Entomology have kindly allowed use of information contained in their files and have co-operated fully in its extraction. It has greatly enhanced the limited observations of the staff of the Forest Biology Laboratory recently established at Quebec City.

Maps were used to present much of the distributional data with dots to represent collection points. This discontinuous method of presentation was considered most suitable for the type of information available. The method of preparing these maps may be of interest. A standard reference system is used in all regions based on grid co-ordinates devised by the Department of Mines and Technical Surveys. Field staff are supplied with grid maps and each collection is located within a 4-mile square grid by means of a 7-digit number. These numbers are entered directly on the punch cards and form the basis for the distribution maps. Using a reference map showing register marks and the main grid co-ordinates, circles were placed on sheets of clear acetate overlay at the regional laboratories to coincide with the grid references for each collection. Visual extrapolation was necessary within a 10 x 10 grid area. The overlays were brought together and

photographed against a reference map of a similar scale for all of Canada. Register marks which allowed accurate positioning of overlays were removed during the photographic process. Where collection localities were particularly concentrated or where collections were made at the same point at different times, each could not be represented by a separate dot. As many as possible were shown, short of a complete coalescence of dots. At this point it becomes obvious that the species is common within the area.

Maps have been prepared for many species but for others the data did not warrant illustration. Recourse was then made to verbal descriptions and to lists of specific localities. Occasional comments on the significance of the recorded distributions in relation to previous records are included.

Host Tree Records

The host tree records are also a significant part of the compilation. Every possible effort has been made to maintain accuracy. Only records covering the collection of larvae or eggs have been included and wherever the association appeared spurious, the collection and rearing data were carefully reviewed. Unless the period of exposure during rearing or descriptive notes indicated that feeding occurred on the specified host, such questionable records were deleted. Feeding records inconsistent with published information have been retained, however, because no real evidence of error was apparent.

Common names of trees have been used in preference to botanical names. Terminology follows the fifth edition of "Native Trees of Canada" published in 1956 by the Forestry Branch, Department of Northern Affairs and National Resources. Exotic and shrub species not treated in this publication are consistent in terminology with the eighth edition of Gray's Manual of Botany. For convenience the common and botanical names of all species referred to are listed in the "Index to Trees and Shrubs". (see p. 72)

Wherever possible the use of generic designations has been avoided. For example, records classified only to spruce were not included if other records did refer to one or more species of spruce. A certain amount of freedom was allowed in the inclusion of non-specific records when they could be converted to specific names with little likelihood of error. For example, collections indicated as "fir" in eastern Canada were considered to be *Abies balsamea* with little or no chance of error. In most instances the number of such records was small in relation to the number of specific records with which they were combined.

Host trees have been listed in a sequence dictated by the number of records available. Appreciation of possible regional variations in preferred host can only be gained from a general knowledge of the range of the various tree species in Canada. Information of this type is available in "Native Trees of Canada". Attention is drawn to species that demonstrate very obvious inter-regional differences in host tree association.

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Feeding Habits

The feeding habit of each species was classified according to the following general scheme:

1. Defoliator
   - Open
     - Solitary —Skeletonizer; Complete
     - Colonial —Skeletonizer; Complete
   - Sheltered
     - Solitary —Leaf roller; Leaf miner; Casebearer; Web maker
     - Colonial —Web maker; Tent former
2. Borer —Shoot; Root; Bark; Trunk
3. Cone Feeder
4. Seed Feeder
5. Gall Maker

The feeding habits of most species listed fall within the various sub-categories of "Defoliator". In some cases the paucity of records does not allow further categorization. Changes in feeding habit are known to occur during development; these are detailed as far as possible.

Prevalence

Except for summaries of the actual collections and specimens received, the information presented under this heading is necessarily rather general. To extend the general conclusions that could be drawn from the volumes of material handled, each species was assigned in regional submissions to categories under two main headings—occurrence and amplitude of variation. The categories under occurrence were: rare, occasional, and common; under amplitude of variation they were: narrow, moderate, and broad. The assignment of these categories was as much as possible according to the following schedule.

The average number of collections per year within a region was used to indicate occurrence. The boundaries between categories varied from region to region, but the following breakdown is typical of the method:

Rare —average number of collections less than 10;
Occasional —average number of collections between 10 and 50;
Common —average number of collections over 50.

The amplitude of variation was recorded according to a similar system using the number of specimens collected during the year. The categories required a good deal of tempering with experience. An example of the system follows:

Narrow —the difference between maximum and minimum number of specimens per year 10-fold or less;

Moderate —the difference between maximum and minimum number of specimens per year between 10- and 50-fold;

Broad —the difference between maximum and minimum number of specimens per year more than 50-fold.

Integration of regional data of the above type was not simple or direct and required a good deal of freedom of interpretation. Where strong regional differences were apparent they were noted. However, some compromise could often be found that adequately expressed, in the terms outlined above, conditions throughout the range of a species. The volume of material that has been handled by the Forest Insect Survey and which formed the basis of classifying occurrence and amplitude of variation has been listed for each species by year. The number of collections and specimens received, as recorded in the present volume, ranges from single collections of individual specimens to more than 3,500 collections composed of over 142,000 specimens.

Seasonal Occurrence

Authentic field data covering the seasonal occurrence of all stages were available for only a limited number of species. Where large amounts of data were available, methods of presentation to develop intra- and inter-regional variations were too complex to be included. Although such variations are common in a country as large and diversified as Canada, they were frequently masked in summations of data covering a period of years. A summary of all collections received according to the stage at the time of receipt and by thirds of months was prepared for each region. No attempt was made to review rearing data or published records to supplement observations of pupation and emergence dates. As might be expected, collection records of late-stage larvae were numerous; but of other stages were often fragmentary. The general pattern of seasonal occurrence, however, was usually apparent.

Wherever possible the periods within which collections of the various stages were made are indicated for each species; any noticeable peaks are noted. In a limited number of cases, a graphic method of presentation has been used for certain stages to demonstrate inter-regional differences that have withstood even the broad grouping of data that has been necessary.

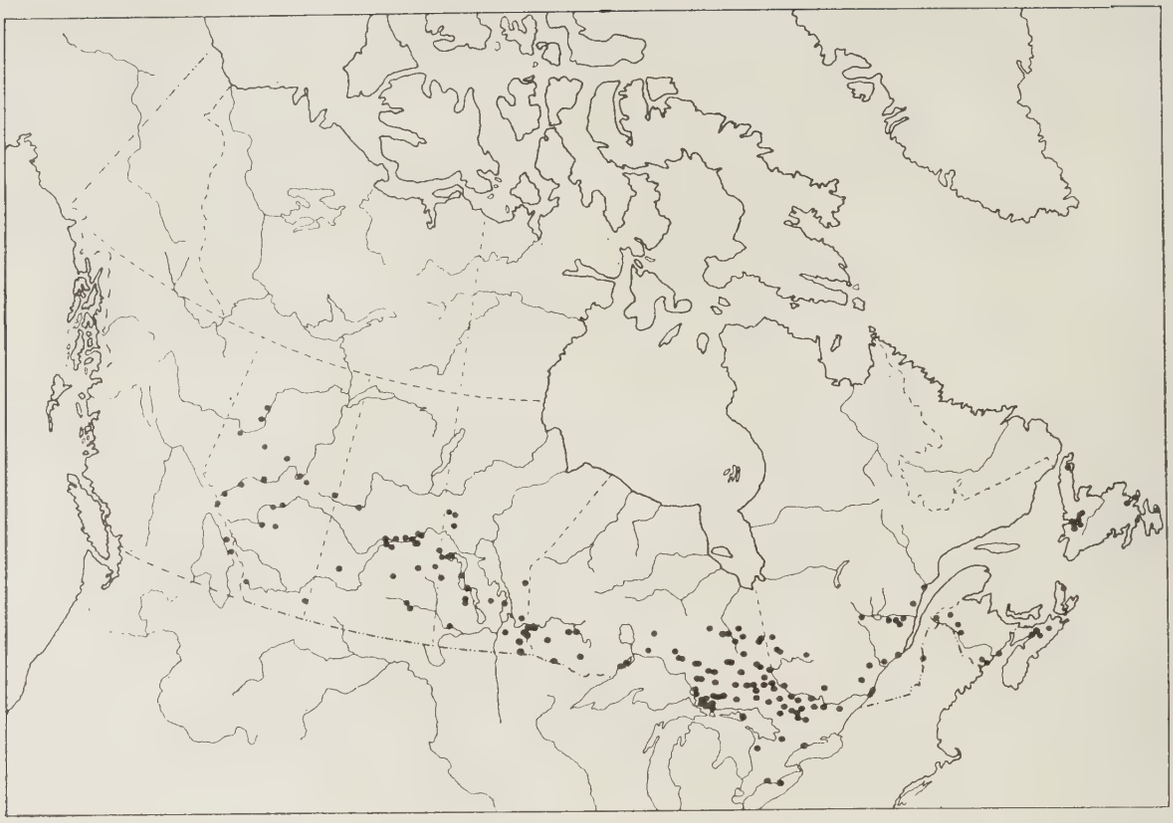

Figure 3. Collection points for *Papilio glaucus canadensis* R. & J.

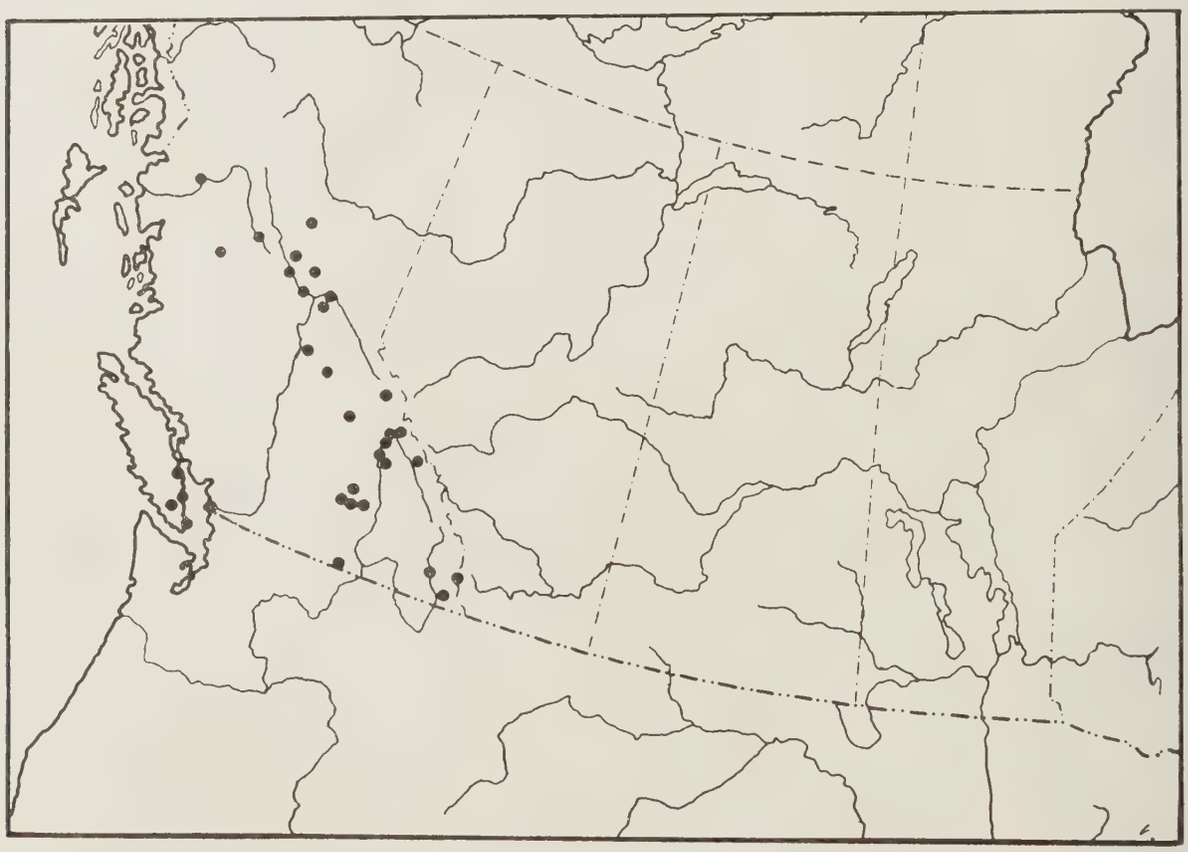

Figure 4. Collection points for *Papilio rutulus* Luc.

MACROLEPIDOPTERA
PAPILIONIDAE

1. *Papilio glaucus canadensis* R. & J. Tiger Swallowtail

DISTRIBUTION: Recorded from all provinces except British Columbia where several closely related species are recognized (see Fig. 3).

HOSTS:

White birch	52	White ash	5
Trembling aspen	44	Balsam poplar	3
Willow	22	Maple	3
Apple	14	Basswood	2
Alder	12	Lilac	2
Mountain-ash	10	Serviceberry	2
Cherry	10	Green ash	1
Yellow birch	6	Hazel	1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Occurs commonly on a variety of hosts of limited or no economic importance which partially accounts for the relatively small number of Survey collections. Moderate variation in numbers occurs.

Summary of Collections and Specimens Received

1954 — 30,	35	1949 — 37,	37	1944 — 18,	40
1953 — 26,	47	1948 — 29,	30	1943 — 1,	1
1952 — 15,	57	1947 — 19,	19	1942 — 3,	3
1951 — 21,	21	1946 — 13,	13		
1950 — 17,	17	1945 — 15,	28	244	348

SEASONAL OCCURRENCE:

Egg: Laid in late spring.

Larva: Mid-July until early September; most common in mid- and late August. Records indicate very little variation throughout its range.

Pupa: Overwintering stage.

Adult: Emerges in spring; most common in June. Occasional records for Ontario indicate additional summer generations.

2. *Papilio rutulus* Luc.

DISTRIBUTION: The interior and southern coastal regions of British Columbia (see Fig. 4).

HOSTS:

Red alder	14	Western white birch	4
Trembling aspen	11	Mountain alder	3
Willow	11	Choke cherry	1

PIERIDAE

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Common within a narrow amplitude of variation on a variety of hosts of limited economic importance.

Summary of Collections and Specimens Received

1955 —	2,	4	1951 —	11,	14	1947 —	1, 1
1954 —	1,	1	1950 —	19,	27		— —
1953 —	1,	1	1949 —	8,	8		51 64
1952 —	4,	4	1948 —	4,	4		

SEASONAL OCCURRENCE:

Egg:

Larva: Mid-July to mid-September; most common in mid- and late August.

Pupa: Overwintering stage; September to June.

Adult: Early June to mid-July.

3. *Papilio multicaudatus* Kby.

DISTRIBUTION: Southern interior of British Columbia.

HOSTS: Willow 1

FEEDING TYPE: Habits little known; probably a solitary defoliator.

PREVALENCE: Survey records would indicate that the species is of rare occurrence. A single larva was collected in 1950.

SEASONAL OCCURRENCE: Inadequate information.

4. *Papilio eurymedon* Luc.

DISTRIBUTION: Southern interior and coastal regions of British Columbia.

HOSTS: Willow ..... 1 Apple 1
Red alder 1

FEEDING TYPE: Considered a solitary defoliator.

PREVALENCE: Rare.

SEASONAL OCCURRENCE: Inadequate information.

PIERIDAE

5. *Neophasia menapia* F. & F. **Pine Butterfly**

DISTRIBUTION: All records are from Vancouver Island or the Okanagan Valley of British Columbia but is known to range farther east in the United States.

HOSTS: Western white pine .... 3 Douglas fir 2
Western hemlock 3

FEEDING TYPE: Colonial feeding defoliator.

PREVALENCE: Occurs only rarely on these common tree species.

Summary of Collections and Specimens Received

1953 —	1,	1	1944 —	3,	9	1941 —	2,	3
1952 —	2,	5	1943 —	3,	14		—	—
1950 —	2,	4					13	36

SEASONAL OCCURRENCE:

Egg:
Larva: Early August.
Pupa: August.
Adult: Mid-August through September.

NYMPHALIDAE

6. *Polygonia interrogationis* Fabr.

DISTRIBUTION: Collected from Nova Scotia west to Lake Superior in Ontario (see Fig. 5).

HOSTS: White elm ..... 14 Slippery elm 1
Trembling aspen ..... 2 Chinese elm 1

FEEDING TYPE: Defoliator; habits inadequately known.

PREVALENCE: Rare in Survey collections although considered a common species in parts of its range in the United States and Mexico.

Summary of Collections and Specimens Received

1953 —	1,	3	1950 —	3,	3	1947 —	2,	6
1952 —	3,	17	1949 —	7,	15	1946 —	7,	33
1951 —	3,	8	1948 —	5,	15		—	—
							31	100

SEASONAL OCCURRENCE:

Egg:
Larva: July and August; more than one generation probably occurs in southern Ontario.
Pupa: Late summer and fall.
Adult: Overwintering stage.

7. *Polygonia comma* Harr.

DISTRIBUTION: The only Survey records are from eastern Ontario as far north as Lake Abitibi.

HOSTS: White elm ..... 3 White birch 1
Occurs more commonly on nettle (*Urtica* spp.) and hop (*Humulus* spp.) than on trees.

FEEDING TYPE: The limited records indicate a solitary leaf roller.

PREVALENCE: Rare on trees.

Summary of Collections and Specimens Received

1952 —	2,	4	1948 —	1,	2	1947 —	1,	1
1949 —	1,	2					—	—
							5	9

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Figure 5. Collection points for *Polygonia interrogationis* Fabr. in Nova Scotia and Ontario and for *Polygonia satyrus* Edw. in British Columbia.

SEASONAL OCCURRENCE:

Egg:
Larva: Late June and early July.
Pupa:
Adult: Overwintering stage.

8. *Polygonia satyrus* Edw.

DISTRIBUTION: Recorded only from southern British Columbia (see Fig. 5).

HOSTS: Willow ..... 4 Birch 1
Alder 3

The common host is nettle (*Urtica* spp.).

FEEDING TYPE: A solitary leaf roller.

PREVALENCE: Occurs occasionally on three hosts but within a narrow amplitude of variation.

Summary of Collections and Specimens Received

1955 — 1, 4	1952 — 5, 10	1948 — 3, 3
1954 — 1, 4	1951 — 3, 8	— —
1953 — 2, 5	1949 — 1, 16	16 50

SEASONAL OCCURRENCE: Larval collections were made from mid-June to late September.

9. *Polygonia faunus* Edw.

DISTRIBUTION: Collected in Ontario, Alberta, and British Columbia; considered to be transcontinental in distribution (see Fig. 6).

HOSTS:

Willow	8	Trembling aspen	1
White birch	2	White elm	1
Yellow birch	2		

Collections have also been made from gooseberry and currant (*Ribes* spp.).

FEEDING TYPE: A defoliator which may construct rough shelters from the leaves on which it feeds.

PREVALENCE: Based on collections from forest trees, the species occurs occasionally and within a narrow amplitude of variation.

Summary of Collections and Specimens Received

1954 —	1,	1	1950 —	4,	15	1946 —	1, 1
1953 —	2,	4	1949 —	8,	10	1944 —	1, 1
1952 —	3,	3	1948 —	3,	19		— —
1951 —	4,	6					27 60

SEASONAL OCCURRENCE:

Egg:

Larva: June and July.

Pupa:

Adult: Overwintering stage.

10. *Nymphalis j-album* Bdv. & Lec.

DISTRIBUTION: Collected from Quebec to Alberta. (see Fig. 7).

HOSTS:

White elm	5	Poplar	1
White birch	4		

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Although noted for its periodicity, Survey records indicate it to be rare and with a narrow amplitude of variation.

Summary of Collections and Specimens Received

1954 —	2,	2	1946 —	1,	2	1938 —	1, 1
1953 —	9,	32	1945 —	2,	4	1937 —	1, 1
1949 —	3,	6	1940 —	2,	2		— —
1948 —	1,	1					22 51

SEASONAL OCCURRENCE:

Egg:

Larva: June and July.

Pupa:

Adult: Overwintering stage.

55481-6—3½

Figure 6. Collection points for *Polygonia faunus* Edw.

Figure 7. Collection points for *Nymphalis j-album* Bdv. & Lec.

11. *Nymphalis antiopa* Linn. Mourning Cloak Butterfly or Spiny Elm Caterpillar

DISTRIBUTION: Found generally across Canada within the area regularly covered by the Forest Insect Survey. (see Fig. 8).

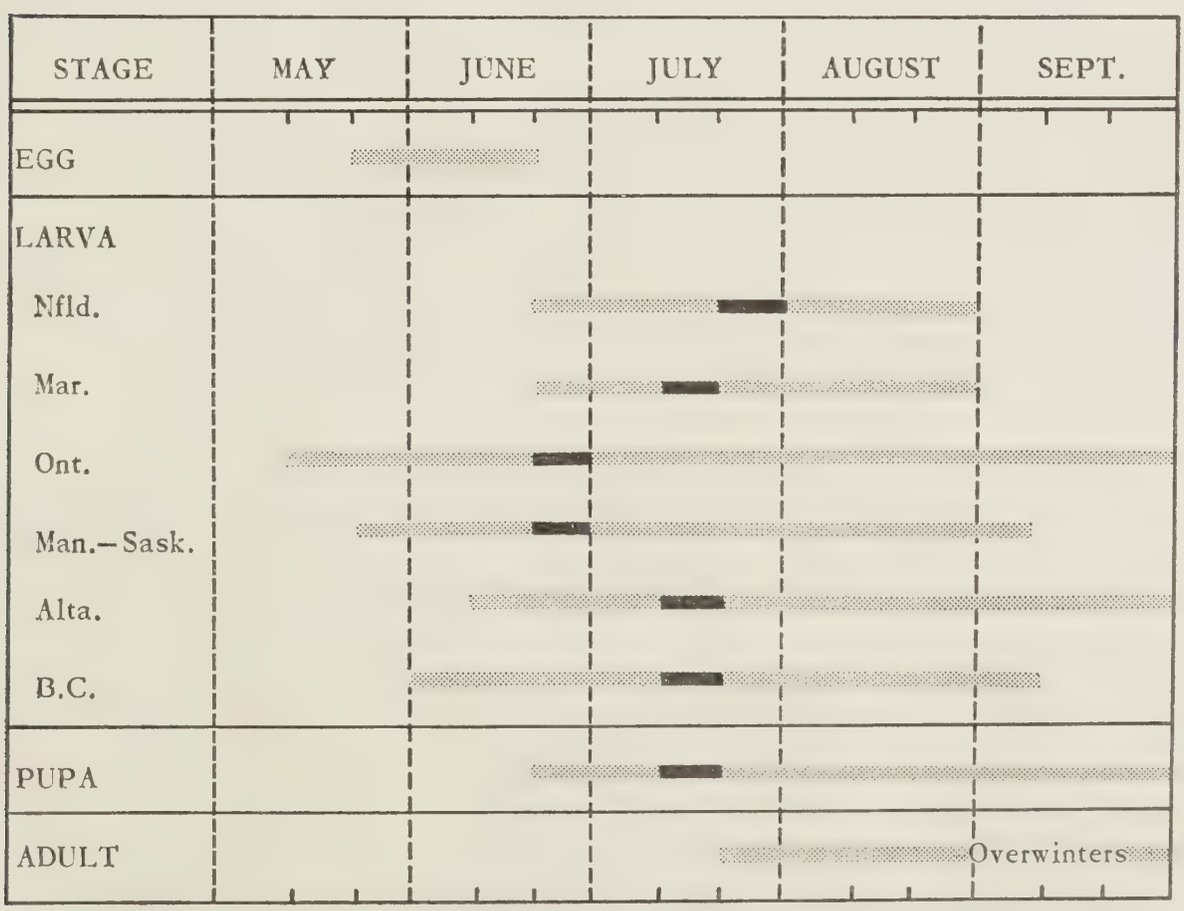
HOSTS:

Willow	297	Alder	2
White elm	159	Lombardy poplar	1
Trembling aspen	146	Silver poplar	1
Balsam poplar	37	Yellow birch	1
Carolina poplar	13	Dwarf birch	1
White birch	10	Eastern cottonwood	1
Chinese elm	6	Mountain-ash	1
Slippery elm	4	White ash	1
Largetooth aspen	3	Ironwood	1
Maple	2	Basswood	1

FEEDING TYPE: Colonial defoliator.

PREVALENCE: Common throughout its range with a moderate to broad amplitude of variation; occasionally causes severe damage to host trees.

SEASONAL OCCURRENCE:



Summary of Collections and Specimens Received

1954 —	124,	1,988	1948 —	105,	1,088	1942 —	7,	82
1953 —	114,	3,339	1947 —	19,	550	1941 —	11,	226
1952 —	94,	1,597	1946 —	43,	803	1940 —	6,	6
1951 —	62,	1,373	1945 —	28,	613	1939 —	1,	5
1950 —	58,	1,029	1944 —	29,	984	1937 —	1,	3
1949 —	90,	1,471	1943 —	4,	37		796	15,194

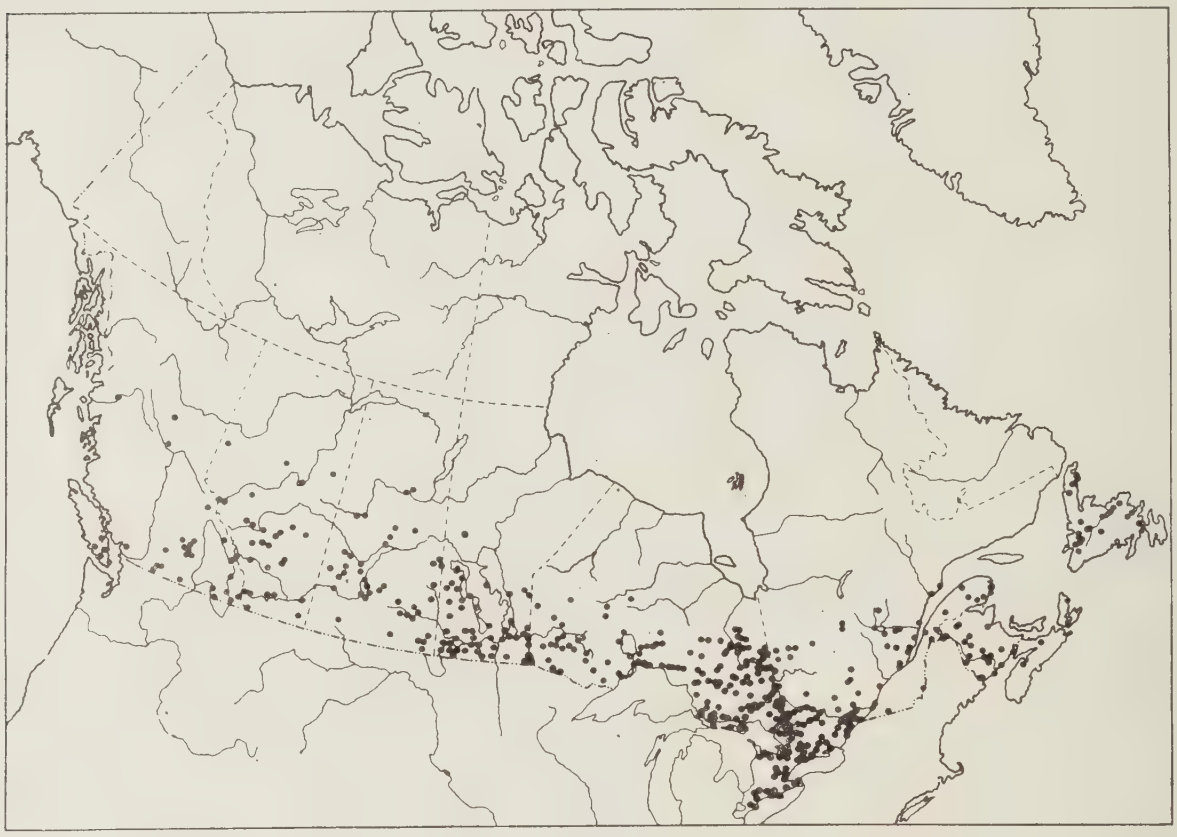


Figure 8. Collection points for *Nymphalis antiopa* Linn.

12. *Vanessa cardui* Linn. Painted-lady Butterfly

DISTRIBUTION: This butterfly occurs commonly throughout North America except for the Arctic regions. A single record from Souris in southwest Manitoba is included because of the unique host record.

HOSTS: White elm 1

Usual hosts are a wide variety of Compositae such as Canada thistle. (*Cirsium arvense* (L.) Scop.).

FEEDING TYPE: A solitary defoliator.

PREVALENCE: Rare on forest trees.

SEASONAL OCCURRENCE: Inadequate information.

13. *Limenitis arthemis* Dru.

DISTRIBUTION: Collections indicate that this butterfly ranges from Quebec to Alberta. Although a sub-species *rubrofasciata* B. & McD. is recognized in the western part of this range, records have been combined under the specific name (see Fig. 9).

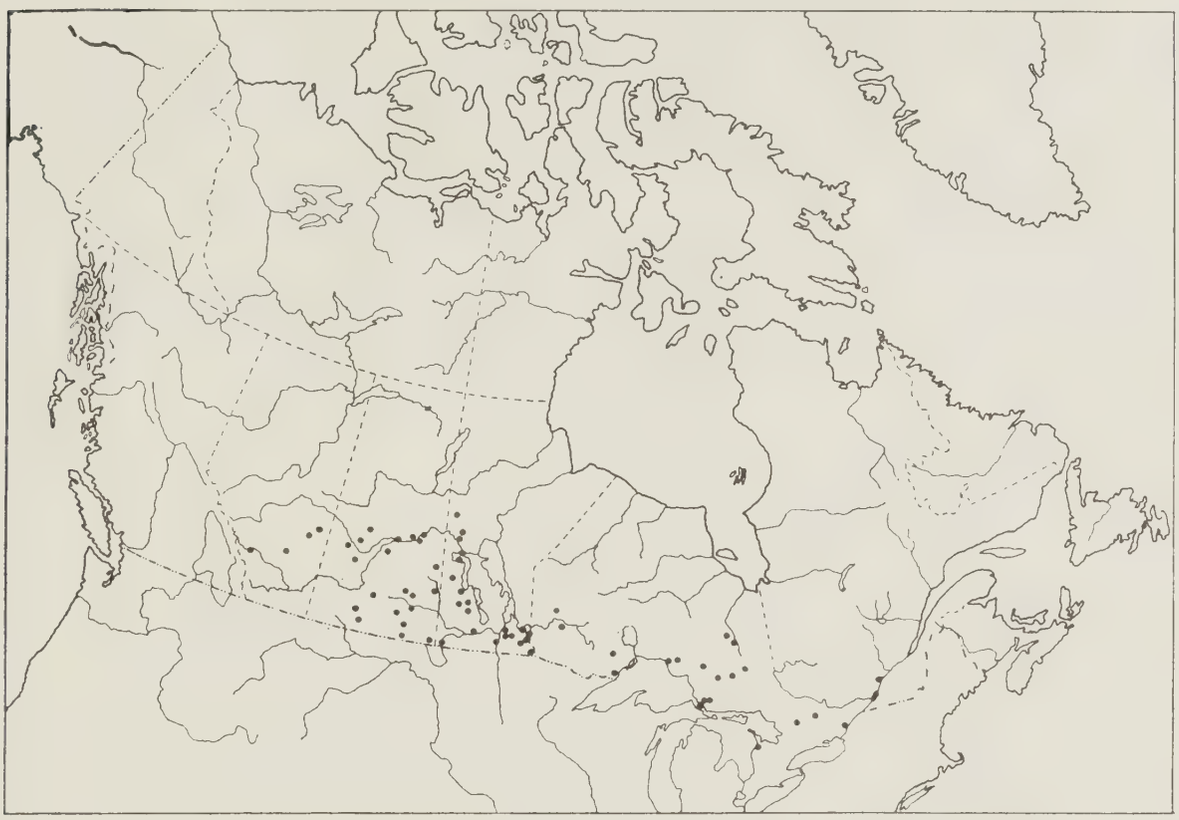


Figure 9. Collection points for *Limenitis arthemis* Dru.

HOSTS:	Trembling aspen	20	Hawthorn	2
	Willow	7	Pin cherry	1
	Balsam poplar	5	White elm	1
	Choke cherry	4	Speckled alder	1
	Apple	3		
	Largetooth aspen	2		

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Common in open hardwood stands and on forest edges. Poorly represented in Survey collections which would indicate it to be relatively rare.

Summary of Collections and Specimens Received

1954 — 11, 11	1949 — 4, 4	1939 — 1, 1
1953 — 9, 13	1948 — 5, 5	1936 — 1, 3
1952 — 10, 15	1947 — 1, 1	— —
1951 — 14, 14	1946 — 1, 1	61 74
1950 — 3, 5	1943 — 1, 1	

NYMPHALIDAE

SEASONAL OCCURRENCE:

Egg:

Larva: Early May to early September, most common in June; overwintering stage.

Pupa: Late June.

Adult: Late June to mid-September.

14. *Limenitis lorquini burrisonii* Mayn.

DISTRIBUTION: Collected only from near Victoria, and in the upper Okanagan Valley, British Columbia.

HOSTS:	Willow	5		Apple	1
	Poplar	1		Snowbrush	1

FEEDING TYPE: A solitary defoliator.

PREVALENCE: Rare as only occasional collections have been received.

Summary of Collections and Specimens Received

1955 — 1, 1	1950 — 1, 1	1947 — 1, 1
1952 — 2, 3	1948 — 1, 1	— —
1951 — 3, 8		9 15

SEASONAL OCCURRENCE: Inadequate information.

15. *Limenitis archippus* Cram. **Viceroy Butterfly**

DISTRIBUTION: Collected from western Quebec to the eastern slopes of the Rocky Mountains in Alberta (see Fig. 10).

HOSTS:	Trembling aspen	12		Balsam poplar	1
	Willow	10		Largetooth aspen	1
	White birch	4		Serviceberry	1
	Lombardy poplar	1			

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Somewhat more common than Survey records would indicate. Most common in southern Ontario.

Summary of Collections and Specimens Received

1954 — 2, 2	1948 — 5, 12	1939 — 5, 8
1953 — 5, 7	1947 — 1, 1	1938 — 3, 4
1952 — 6, 11	1946 — 1, 1	1937 — 2, 2
1951 — 2, 2	1945 — 1, 1	— —
1950 — 7, 7	1943 — 1, 1	46 64
1949 — 4, 4	1940 — 1, 1	

SEASONAL OCCURRENCE:

Egg:

Larva: Mid-May to early August; most common during early and mid-July.

Pupa: Mid-July to early September.

Adult: Mid-July to late September. A second generation is indicated in southern Ontario records.

Figure 10. Collection points for *Limenitis archippus* Cram.

16. *Asterocampa celtis* Bdv. & Lec.

DISTRIBUTION: Collected only from two localities; extreme southwestern Ontario, and near Truro, Nova Scotia.

HOSTS: Hackberry 1

The unique Nova Scotia record was made from yellow birch, but the rearing history does not allow this host record to be fully supported.

FEEDING TYPE: Limited records indicate the species is a leaf roller.

PREVALENCE: Rare.

Summary of Collections and Specimens Received

1953 —	1,	3	1946 —	2,	28
				3	31

SEASONAL OCCURRENCE: Larvae were collected during early and mid-August.

LYCAENIDAE

17. *Strymon acadica muskoka* Wats. & Coms.

DISTRIBUTION: Survey records are not indicative of the recorded distribution of this butterfly. It is best known from central and southern Canada, but only a single collection in southwestern Saskatchewan from near the town of Shaunavon has been recorded.

HOSTS: Willow 1

55481-6—4

LYCAENIDAE

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare. The single collection was made in 1950.

SEASONAL OCCURRENCE: The single larva was collected during late June.

18. *Strymon falacer* Godt.

DISTRIBUTION: Recorded from southern Ontario at Ottawa, Midhurst, Niagara Falls, Simcoe, and London.

HOSTS: White oak 6
Black walnut 3
Red oak 1

FEEDING TYPE: A defoliator but precise feeding habits unknown.

PREVALENCE: Although one of the more common members of the genus, Survey records would indicate it to be of rather rare occurrence.

1952 — 3, 10	1948 — 6, 12	1946 — 2, 2
1950 — 2, 7	1947 — 1, 1	— —
1949 — 1, 2		15 34

SEASONAL OCCURRENCE: The larval collections were made during late May and June.

19. *Strymon liparops strigosa* Harr.

DISTRIBUTION: Southern Ontario and southeastern Manitoba (see Fig. 11).

HOSTS: Hickory	4	White birch	1
Ash	2	Mountain-ash	1
Pin cherry	1	Canada plum	1
Choke cherry	1	Serviceberry	1
Trembling aspen	1		

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare.

Summary of Collections and Specimens Received

1951 — 1, 1	1948 — 8, 19	1944 — 3, 4
1949 — 3, 9		— —
		15 33

SEASONAL OCCURRENCE:

Egg: A single record for mid-June; overwintering stage.

Larva: Throughout June.

Pupa:

Adult:

20. *Strymon caryaevorus* McD.

DISTRIBUTION: Known only from Ontario throughout the range of its host tree north of Lake Erie, Lake Ontario and the St. Lawrence River.

HOSTS: Hickory 4

FEEDING TYPE: Defoliator.

PREVALENCE: Rare.

Summary of Collections and Specimens Received

1952 — 1, 10	1951 — 2, 2	1948 — 2, 10
		5 22

SEASONAL OCCURRENCE:

Egg:
Larva: Late May to mid-June.
Pupa: Mid-June.
Adult: Early July.

21. *Mitoura spinetorum* Hew.

DISTRIBUTION: A single collection is on record from Squilax in the interior of British Columbia.

HOSTS: Pine 1

This rare butterfly is reputed to feed on pine mistletoe.

FEEDING TYPE: A defoliator.

PREVALENCE: Rare. A collection containing one larva was taken in 1946.

SEASONAL OCCURRENCE: The collection was made in mid-August.

22. *Mitoura nelsoni* Bdv.

DISTRIBUTION: Collected from the interior and southern coastal regions of British Columbia (see Fig. 11).

Figure 11. Collection points for *Strymon liparops strigosa* Harr. in Ontario and Manitoba and for *Mitoura nelsoni* Bdv. in British Columbia.

55481-6—4½

LYCAENIDAE

HOSTS: Western red cedar 11
Western hemlock 1
Rocky Mountain juniper 1

FEEDING TYPE: A solitary defoliator.

PREVALENCE: Rare.

Summary of Collections and Specimens Received

1955 — 1, 1	1951 — 1, 1	1941 — 2, 2
1954 — 1, 1	1950 — 2, 2	— —
1953 — 1, 1	1949 — 5, 15	13 23

SEASONAL OCCURRENCE: Larval collections were made from late June to mid-August.

Figure 12. Collection points for *Incisalia lanoraieensis* Shep. in New Brunswick and Nova Scotia and for *Incisalia niphon clarki* Free. in Ontario, Manitoba, and Saskatchewan.

23. *Incisalia lanoraieensis* Shep.

DISTRIBUTION: Collected from New Brunswick and Nova Scotia (see Fig. 12).

HOSTS: White spruce 5
Red spruce 3
Black spruce 1

An additional 14 collections were taken from spruce trees but the exact species involved are uncertain.

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare.

Summary of Collections and Specimens Received

1952 — 1, 3	1943 — 3, 3	1939 — 3, 3
1947 — 1, 1	1942 — 2, 2	1938 — 2, 2
1945 — 1, 1	1941 — 1, 1	— —
1944 — 5, 7	1940 — 4, 5	23 28

SEASONAL OCCURRENCE:

Egg:

Larva: Early July to early August; predominantly during mid-July.

Pupa: A single specimen collected during late July.

Adult:

Figure 13. Collection points for *Incisalia eryphon* Bdv.

24. *Incisalia eryphon* Bdv.

DISTRIBUTION: A western species collected from the eastern slopes region of Alberta and from British Columbia (see Fig. 13). A single collection was made in the Rainy Lake area of northwestern Ontario.

HOSTS:

Lodgepole pine	132	Douglas fir	3
Western red cedar	27	Western hemlock	3
Ponderosa pine	9	Limber pine	1
Western white pine	9	Eastern white pine	1
Jack pine	3		

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Occurs occasionally with a moderate amplitude of variation.

Summary of Collections and Specimens Received

1954 — 3, 5	1949 —101, 198	1941 — 8, 30
1953 — 1, 1	1948 — 23, 30	1940 — 1, 1
1952 — 2, 2	1947 — 8, 9	— —
1951 — 15, 15	1946 — 4, 6	199 343
1950 — 31, 43	1942 — 2, 3	

SEASONAL OCCURRENCE:

Egg:

Larva: Early June to late August. Late June records predominate in Alberta collections; in British Columbia early and mid-July records predominate.

Pupa: British Columbia records indicate mid-July to mid-August.

Adult:

25. *Incisalia niphon clarki* Free.

DISTRIBUTION: Although it probably occurs farther east, collections have only been made in Ontario, Manitoba, and Saskatchewan (see Fig. 12).

HOSTS:

Jack pine	108	Red pine	2
Eastern white pine	8	Scots pine	1
White spruce	4		

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Somewhat rare but occasionally found in numbers.

Summary of Collections and Specimens Received

1954 — 17, 17	1949 — 1, 1	1944 — 6, 8
1953 — 10, 12	1948 — 42, 77	1943 — 1, 1
1952 — 4, 4	1947 — 26, 42	1942 — 3, 5
1951 — 7, 9	1946 — 7, 18	1941 — 4, 12
1950 — 3, 8	1945 — 1, 1	— —
		132 215

SEASONAL OCCURRENCE:

Egg:

Larva: Mid-June to mid-August; predominantly during July.

Pupa: A limited number of collections taken between mid-July and late August.

Adult:

HESPERIIDAE

26. *Epargyreus clarus* Cram. **Silver-spotted Skipper**

DISTRIBUTION: Recorded from a number of points in southern Ontario and from one location in southern Alberta (Manyberries).

HOSTS:

Honey-locust	10
Black locust	6

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare.

Summary of Collections and Specimens Received

1955 —	4,	10	1947 —	1,	5	1944 —	5, 29
1950 —	4,	6	1946 —	2,	2	1941 —	1, 1
1949 —	1,	1					18 54

SEASONAL OCCURRENCE:

Egg:

Larva: Early July to mid-September; most abundant in late August.

Pupa: A single record for mid-August.

Adult:

27. *Erynnis icelus* Scud. & Burg.

DISTRIBUTION: Collected from widely scattered points in New Brunswick, Ontario, Manitoba, Saskatchewan, and the southern interior of British Columbia (see Fig. 14).

Figure 14. Collection points for *Erynnis icelus* Scud. & Burg.

HOSTS: Willow 6
Trembling aspen 4
Balsam poplar 2

FEEDING TYPE: Solitary feeding leaf roller.

PREVALENCE: Rare.

Summary of Collections and Specimens Received

1954 —	2,	7	1949 —	1,	1	1946 —	1, 1
1952 —	1,	1	1948 —	1,	1	1944 —	2, 3
1951 —	3,	3	1947 —	4,	4		15 21

SEASONAL OCCURRENCE: The widely scattered larval records extend from late July to mid-September with the Ontario records tending to be earliest.

28. *Erynnis propertius* Scud. & Burg.

DISTRIBUTION: Only collected from the Saanich Peninsula of Vancouver Island, British Columbia.

HOSTS: Garry oak 2

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare. Two collections of individual larvae were made in 1955.

SEASONAL OCCURRENCE: The larval collections were made in late June and early August.

SPHINGIDAE

29. *Ceratomia amyntor* Hbn. **Elm Sphinx**

DISTRIBUTION: Collected from Cape Breton Island in Nova Scotia, through New Brunswick and central and northern Ontario, to southeastern Manitoba. Collections have also been made in west-central Manitoba and Saskatchewan (see Fig. 15).

Figure 15. Collection points for *Ceratomia amyntor* Hbn.

HOSTS: White elm 14
Basswood 2
Bur oak 1
Cherry 1
Birch 1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare.

Summary of Collections and Specimens Received

1953 —	6,	6	1949 —	5,	5	1946 —	1, 1
1952 —	5,	5	1948 —	2,	2	1937 —	1, 1
1950 —	2,	2	1947 —	5,	5		27 27

SEASONAL OCCURRENCE: Larvae were collected from early July to late September but most commonly in mid-August.

30. *Ceratomia undulosa* Wlk.

DISTRIBUTION: Records indicate a rather discontinuous distribution. A single collection has been taken in western Newfoundland, a few in southwestern Ontario, and an appreciable number in southern Manitoba and Saskatchewan, as well as central Alberta (see Fig. 16).

HOSTS: Green ash ..... 66 Black ash 1
White ash 3

Figure 16. Collection points for *Ceratomia undulosa* Wlk.

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare in the east but in the Prairie Provinces it occasionally becomes moderately abundant on green ash in shelterbelts.

Summary of Collections and Specimens Received

1953 —	1,	1	1949 —	4,	5	1946 —	1, 1
1951 —	2,	2	1948 —	49,	92	1942 —	1, 1
1950 —	9,	9	1947 —	19,	69		86 180

55481-6—5

SEASONAL OCCURRENCE:

Egg: Collected in early August.

Larva: Mid-June to mid-September; most common in late July to mid-August.

Pupa:

Adult:

31. *Ceratomia catalpae* Bdv. Catalpa Sphinx

DISTRIBUTION: A single record has been obtained from the Windsor area of southwestern Ontario.

HOSTS: Catalpa 1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare. A single collection of larvae was taken in 1944.

SEASONAL OCCURRENCE: The collection was made in September.

Figure 17. Collection points for *Sphinx chersis* Hbn.

32. *Sphinx chersis* Hbn. Great Ash Sphinx

DISTRIBUTION: Recovered from the Gaspe Peninsula of Quebec through to southern Saskatchewan although not recorded from northern Ontario (see Fig. 17).

HOSTS: Green ash	2	Pin cherry	1
White ash	1	Dogwood	1
Yellow birch	1	Canada plum	1
White birch	1		

FEEDING TYPE: Solitary defoliator.
PREVALENCE: Rare.

Summary of Collections and Specimens Received

1953 —	2,	2	1948 —	2,	5	1941 —	1, 1
1952 —	1,	1	1947 —	2,	2	1940 —	2, 2
1951 —	1,	1	1946 —	1,	4	—	—
1950 —	2,	2	1945 —	1,	1	15	21

SEASONAL OCCURRENCE: Larvae collected from early July to mid-September.

33. *Sphinx kalmiae* J. E. Smith

DISTRIBUTION: Collected from Newfoundland, the Maritime Provinces, and south and eastern Ontario north to Sault Ste. Marie and Kirkland Lake (see Fig. 18).

Figure 18. Collection points for *Sphinx kalmiae* J. E. Smith.

HOSTS: Black ash 1
White ash 1
Lilac 1

FEEDING TYPE: Solitary defoliator.
PREVALENCE: Rare.

Summary of Collections and Specimens Received

1953 —	1,	1	1945 —	2,	2	1939 —	3, 3
1951 —	1,	1	1944 —	3,	3	1938 —	1, 5
1950 —	1,	1	1942 —	2,	5	—	—
1946 —	1,	1	1941 —	1,	2	16	24

55481-6—5½

SEASONAL OCCURRENCE:

Egg:

Larva: Mid-July to early September in Ontario and early September to early October in the Maritime Provinces.

Pupa: A single Maritime record for late October.

Adult:

34. *Sphinx gordius* Cram.

DISTRIBUTION: Collection localities extend from central Newfoundland through New Brunswick, Ontario, Manitoba, and Saskatchewan as far as Peace River, Alberta (see Fig. 19).

HOSTS: Tamarack 37
White spruce 1

A number of other hosts have been recorded but no specimens have completed development during rearing; included are balsam fir, cherry, alder, and willow.

Figure 19. Collection points for *Sphinx gordius* Cram.

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare.

Summary of Collections and Specimens Received

1954 — 6, 6	1950 — 12, 14	1945 — 4, 4
1953 — 9, 9	1949 — 2, 2	1941 — 1, 1
1952 — 1, 1	1948 — 10, 10	— —
1951 — 5, 7	1947 — 6, 6	56 60

SEASONAL OCCURRENCE:

Egg:

Larva: Mid-July to late September; most common during August.

Pupa:

Adult: A limited number of collections taken during June.

35. *Sphinx luscitiosa* Clem.

DISTRIBUTION: Although known from eastern Canada and adjacent United States, the only Survey records are from Alberta near Beaver Dam and Sundre.

HOSTS: Willow 1
Poplar 1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Generally considered a rare species. Collections of single larvae were made in 1950 and 1951.

SEASONAL OCCURRENCE: The two collections were made during late July and late August.

Figure 20. Collection points for *Sphinx drupiferarum* J. E. Smith

36. *Sphinx drupiferarum* J. E. Smith

DISTRIBUTION: Collected from western Newfoundland, eastern Nova Scotia, eastern and central Ontario, and central British Columbia (see Fig. 20).

HOSTS: Apple	2	Bitter cherry	1
Choke cherry	1	Serviceberry	1
Black cherry	1		

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Apparently rare.

Summary of Collections and Specimens Received

1953 —	2,	2	1949 —	1,	1	1941 —	1,	2
1952 —	1,	1	1948 —	1,	4		—	—
1950 —	2,	2	1947 —	1,	1		9	13

SEASONAL OCCURRENCE: All collections contained larvae and were made between late July and mid-September. Known to overwinter as a pupa with adults emerging in late spring.

Figure 21. Collection points for *Lapara bombycoides* Wlk.

37. *Lapara bombycoides* Wlk.

DISTRIBUTION: Recorded from Nova Scotia to Saskatchewan. In the eastern provinces and southern Ontario white pine is the common host; in northern Ontario and the Prairies it is collected mainly from jack pine (see Fig. 21).

HOSTS:

Jack pine	142	Scots pine	6
Eastern white pine	84	Pitch pine	1
Red pine	33	Tamarack	1

The tamarack record is somewhat unusual but has been carefully checked and appears valid. The material was in rearing for nearly four weeks and satisfactory pupation and adult emergence were obtained.

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare but more common in the central part of its indicated range. Found only in small numbers.

Summary of Collections and Specimens Received

1954 — 12,	14	1949 — 44,	59	1944 — 12,	13
1953 — 25,	28	1948 — 18,	20	1943 — 1,	2
1952 — 27,	27	1947 — 40,	53	1942 — 4,	5
1951 — 25,	28	1946 — 19,	41	1937 — 1,	1
1950 — 14,	16	1945 — 18,	31	260	338

SEASONAL OCCURRENCE:

Egg:

Larva: Late June to late September; most common during mid- and late August.

Pupa: The overwintering stage; collected in September and June.

Adult:

Figure 22. Collection points for *Smerinthus jamaicensis* Dru.

38. *Smerinthus jamaicensis* Dru.

DISTRIBUTION: A single record from the Avalon Peninsula of Newfoundland is the only collection point east of Ontario. It has also been collected from the Prairie Provinces and west-central British Columbia (see Fig. 22).

HOSTS:					
	Willow	31	White birch	2
	Trembling aspen	9	Black cottonwood	2
	Balsam poplar	4	Largetooth aspen	1
	Elm	2	Choke cherry	1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare in eastern Canada; occurs more commonly in the Prairie Provinces, but in small numbers.

Summary of Collections and Specimens Received

1954	—	7,	11	1949	—	3,	5	1943 —	1, 1
1953	—	8,	13	1948	—	9,	13	1938 —	1, 1
1952	—	5,	5	1947	—	2,	6	1937 —	1, 1
1951	—	6,	6	1944	—	1,	1		— —
1950	—	20,	31	1945	—	6,	8		70 102

SEASONAL OCCURRENCE:

Egg:

Larva: Early July to late September; predominantly from late July to late August. The limited records indicate a somewhat later development from east to west.

Pupa: The overwintering stage.

Adult: Late May to early July.

39. *Smerinthus cerisyi* Kby.

DISTRIBUTION: Although two sub-species are known to occur in Canada, *borealis* Clark in the Prairie Provinces and *ophthalmicus* Bdv. in British Columbia, Survey records do not permit their separation. Only occasional collections have been made in Newfoundland, the Maritime Provinces, and Ontario. Collected more commonly in the Prairie Provinces and in British Columbia where it has been taken from southern Vancouver Island to the northern boundary of the Province at 60° north latitude (see Fig. 23).

HOSTS: Trembling aspen 42
Willow 24
Balsam poplar 1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare in the east and more common in the west, where it is occasionally found in considerable numbers.

Summary of Collections and Specimens Received

1955	—	4,	9	1949	—	9,	17	1943 —	1, 1
1954	—	14,	68	1948	—	3,	27	1941 —	1, 1
1953	—	15,	18	1947	—	3,	5	1939 —	1, 1
1952	—	9,	163	1946	—	1,	1		— —
1951	—	12,	20	1945	—	2,	2		94 377
1950	—	18,	28	1944	—	1,	16		

SEASONAL OCCURRENCE:

Egg: A single Ontario record for late July.

Larva: Mid-June to early October; most common during August.

Pupa:

Adult: Twenty collections of adults were made between late May and late August.

Figure 23. Collection points for *Smerinthus cerisyi* Kby.

40. *Paonias excaecata* J. E. Smith

DISTRIBUTION: A limited number of collections have been made from Nova Scotia to Saskatchewan and from the interior of British Columbia (see Fig. 24).

HOSTS:

White birch	9	Willow	2
Elm	4	Yellow birch	1
Trembling aspen	4	Western white birch	1
Basswood	2		

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare and in small numbers.

Summary of Collections and Specimens Received

1954 — 3, 7	1950 — 6, 6	1946 — 3, 4
1953 — 2, 2	1949 — 4, 7	1945 — 1, 1
1952 — 1, 1	1948 — 3, 5	1938 — 1, 3
1951 — 1, 1	1947 — 6, 8	— —
		31 45

SEASONAL OCCURRENCE:

Egg:

Larva: Early July to mid-September; most common in mid- and late August.

Pupa: A single collection during early September.

Adult: Early June and late July.

Figure 24. Collection points for *Paonias excaecata* J. E. Smith.

41. *Paonias myops* J. E. Smith

DISTRIBUTION: Collected only in the central part of Ontario near Ottawa in the east and at Montreal River north of Sault Ste. Marie.

HOSTS: Serviceberry 2

FEEDING TYPE: Solitary defoliator.

OCCURRENCE: Rare. Two collections consisting of 4 larvae were made in 1953.

SEASONAL OCCURRENCE: Both collections contained larvae and were made during late August.

42. *Paonias myops occidentalis* Clark

DISTRIBUTION: This sub-species has been collected only from the upper Okanagan Valley and near Quesnel in British Columbia.

HOSTS: Choke cherry 2

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare and in small numbers. Two collections of seven larvae were made in 1950 and a single collection of two larvae in 1951.

SEASONAL OCCURRENCE: The larval collections were taken during mid- and late August.

43. *Pachysphinx modesta* Harr.

DISTRIBUTION: Scattered collections have been made across Canada from central Newfoundland to the interior of British Columbia (see Fig. 25).

HOSTS: Trembling aspen 13
Yellow birch 1
Willow 1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare and in small numbers; usually collected as individual larvae or adults. In the tabulation below the unusally high number of specimens given for 1952 and 1953 are the result of egg collections.

Figure 25. Collection points for *Pachysphinx modesta* Harr.

Summary of Collections and Specimens Received

1954 — 5, 7	1949 — 1, 1	1943 — 1, 2
1953 — 12, 166	1948 — 9, 9	1942 — 1, 1
1952 — 10, 93	1947 — 6, 7	1939 — 1, 1
1951 — 1, 1	1946 — 1, 1	— —
1950 — 7, 7	1944 — 1, 2	56 297

SEASONAL OCCURRENCE:

Egg: The few collections made were received during June.

Larva: Mid-July to mid-September.

Pupa: Overwintering stage.

Adult: Records of this stage predominate and extend from early June to mid-August; most abundant in late June.

SATURNIIDAE

44. *Hyalophora cecropia* Linn. **Cecropia Moth**

DISTRIBUTION: This large distinctive moth has been collected from New Brunswick to southeastern Alberta. The almost complete absence of collections north of Lake Superior should be noted as well as the numerous records taken in the agricultural area of the Prairie Provinces (see Fig. 26).

HOSTS:

Manitoba maple	380	Apple	13
Caragana	34	Willow	11
Green ash	27	White birch	11
White elm	19	Trembling aspen	7
		Lilac	1

Small numbers of collections have also been taken from a wide variety of trees and shrubs including various species of *Prunus,* maple, hawthorn, sumac, currant, and alder.

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Relatively rare in eastern Canada but commonly occurs in larger numbers in the Prairie Provinces where Manitoba maple trees are often severely defoliated.

Summary of Collections and Specimens Received

1954 —	9,	43	1948 —	132,	302	1942 —	5,	6
1953 —	5,	5	1947 —	86,	429	1941 —	7,	7
1952 —	7,	69	1946 —	59,	403	1940 —	13,	19
1951 —	8,	9	1945 —	63,	75	1939 —	3,	3
1950 —	41,	70	1944 —	48,	56	1938 —	1,	3
1949 —	43,	98	1943 —	28,	34		558	1,631

SEASONAL OCCURRENCE:

Egg: Mid-May to late July.

Larva: Early May to mid-October; most common in August and early September.

Pupa: Overwintering stage; August to June.

Adult: Late May to late July; most common in June.

45. *Hyalophora gloveri nokomis* Brodie

DISTRIBUTION: Collections have been made at Lancer, Saskatchewan, and Calgary, Lougheed, Harmon Valley, and Rockford Bridge, Alberta.

HOSTS:

Silverberry	4
Willow	1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare on forest trees. Two collections of individual larvae were made in 1955, and four collections totalling five larvae were made in 1950.

SEASONAL OCCURRENCE: Larvae have been taken during early May but more commonly during early and mid-August.

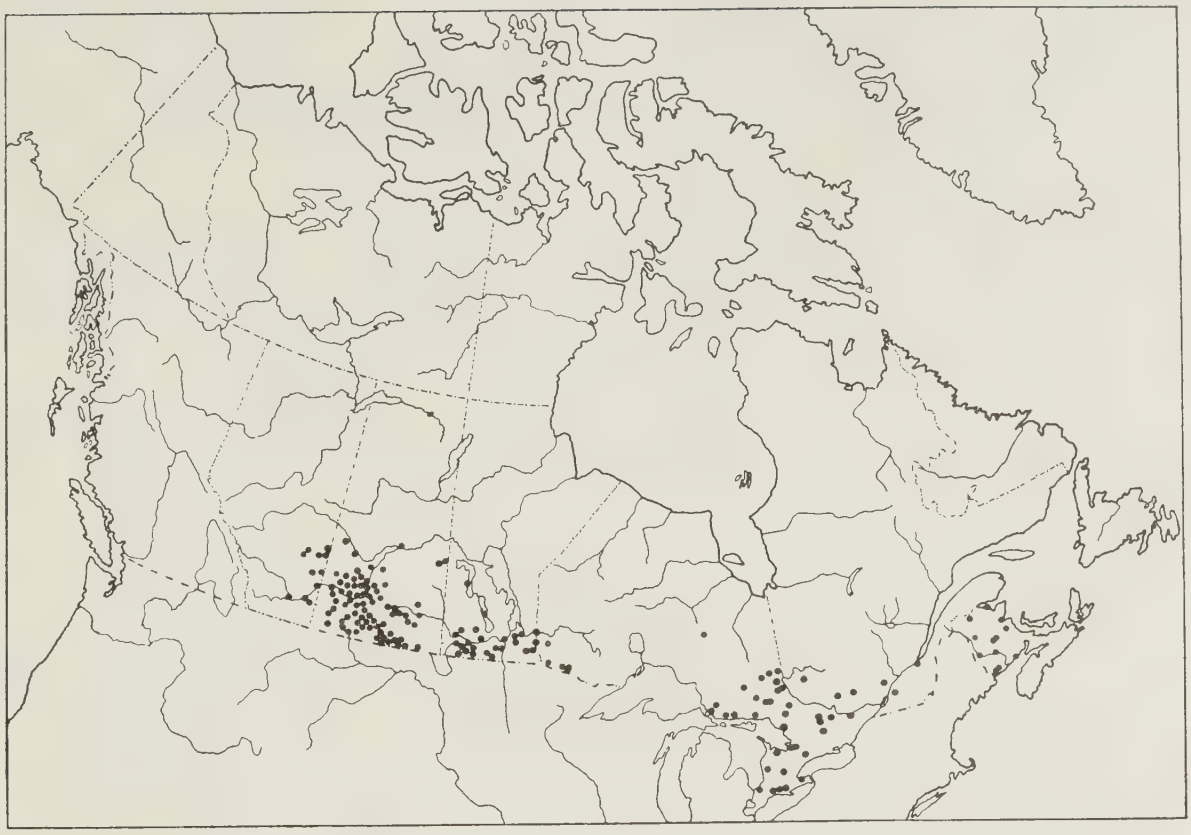


Figure 26. Collection points for *Hyalophora cecropia* Linn.

Figure 27. Collection points for *Hyalophora columbia* Sm. in New Brunswick, Ontario, and Manitoba and for *Hyalophora euryalus* Bdv. in British Columbia.

SATURNIIDAE

46. *Hyalophora columbia* Sm.

DISTRIBUTION: Collections have been made in southwestern New Brunswick, south-central and northwestern Ontario, and southeastern Manitoba (see Fig. 27).

HOSTS: Tamarack 14

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare and in small numbers.

Summary of Collections and Specimens Received

1954	1,	1	1948	1,	1	1943	1, 4
1953	2,	4	1947	1,	1	1940	1, 5
1952	1,	1	1945	2,	2		— —
1949	4,	4					14 23

SEASONAL OCCURRENCE:

Egg:

Larva: Early July to late August.

Pupa: A single collection recorded during early September; the overwintering stage.

Adult: Known to emerge in late spring.

47. *Hyalophora euryalus* Bdv.

DISTRIBUTION: Recorded west of the Continental Divide in southern British Columbia (see Fig. 27).

HOSTS: Red alder 5
Willow 2
Western white birch 1

Collections have also been made from wild rose, various species of *Ribes* and *Shepherdia canadensis* (L.) Nutt.

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare and in small numbers on forest trees.

Summary of Collections and Specimens Received

1955	2,	3	1951	4,	6	1947	2, 2
1953	4,	4	1950	9,	13	1940	1, 3
1952	4,	4	1949	2,	2		28 37

SEASONAL OCCURRENCE:

Egg:

Larva: Early July to late August; most common during August.

Pupa: The overwintering stage; collections have been made during October and early November as well as January and March.

Adult: Single collections are recorded for late May and late June.

48. *Hyalophora promethea* Dru.

DISTRIBUTION: Collections of this species have been made only in southwestern Ontario in the vicinity of the following towns: St. Thomas, Sarnia, Simcoe, Clinton, Galt, Midhurst, and Gravenhurst.

HOSTS:

Black Cherry	1	White ash	1
Pin cherry	1	Sassafras	1
Green ash	1	Tulip-tree	1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: A rare species that occurs only in small numbers.

Summary of Collections and Specimens Received

1952 —	1,	3	1948 —	1,	1	1945 — 1,	?
1951 —	1,	8	1946 —	4,	4	—	—
						8	16+

SEASONAL OCCURRENCE:

Egg: A single collection was taken from sassafras during the latter part of July.

Larva: August.

Pupa: The overwintering stage.

Adult:

49. *Actias luna* Linn. **Luna Moth**

DISTRIBUTION: Collected from southern Quebec to Saskatchewan along the southern limits of white birch (see Fig. 28).

Figure 28. Collection points for *Actias luna* Linn.

SATURNIIDAE

HOSTS:

White birch	95	Hazel	2
Ironwood	14	Alder	2
Red oak	13	Hickory	2
Elm	7	Red maple	2
Trembling aspen	6	White oak	2
Willow	5	Basswood	1
Sugar maple	4	Beech	1
Yellow birch	3	Black locust	1
Black walnut	2	Cherry	1
Butternut	2	Serviceberry	1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare except in Ontario where it occasionally becomes moderately abundant.

Summary of Collections and Specimens Received

1954 — 32, 39	1949 — 37, 123	1944 — 3, 3
1953 — 10, 164	1948 — 62, 235	1942 — 1, 1
1952 — 3, 5	1947 — 27, 77	1941 — 3, 3
1951 — 12, 12	1946 — 15, 113	— —
1950 — 18, 29	1945 — 10, 16	233 820

SEASONAL OCCURRENCE:

Egg: Mid-July to mid-August, but predominantly during July in Ontario.

Larva: Late June to late September; most common during late July and early August.

Pupa: The overwintering stage; collected mid-July to early September and in late May.

Adult: Late May to early August; most common during the early part of the period.

50. *Antheraea polyphemus* Cram. **Polyphemus Moth**

DISTRIBUTION: Collected generally throughout the area normally surveyed with the exception of Newfoundland and Prince Edward Island (see Fig. 29).

HOSTS:

White birch	107	White elm	2
Willow	27	Garry oak	2
Red alder	24	Vine maple	1
Yellow birch	12	Manitoba maple	1
Red maple	7	Pin cherry	1
Trembling aspen	6	Choke cherry	1
Silver maple	5	Mountain-ash	1
Ironwood	5	Pin oak	1
White oak	5	Red oak	1
Bur oak	5	Hawthorn	1
Beech	3	Blue-beech	1
Red osier dogwood	3	Black walnut	1
Basswood	3	Serviceberry	1

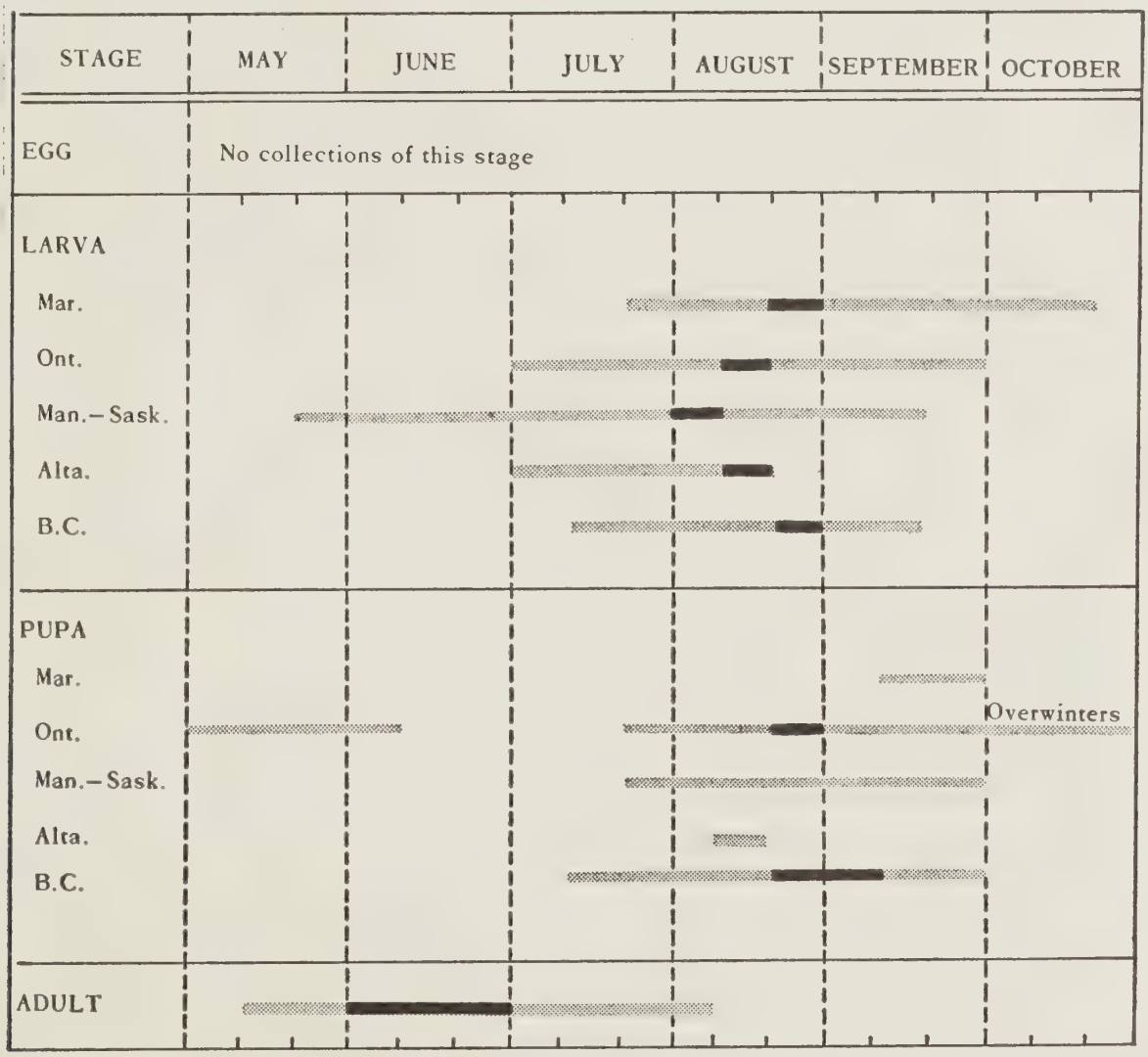
FEEDING TYPE: Solitary defoliator.

PREVALENCE: Occasional but is common in Ontario and British Columbia. Usually occurs in small numbers except in Ontario where it may be moderately abundant.

Summary of Collections and Specimens Received

1954 — 17, 37	1948 — 62, 89	1942 — 11, 11
1953 — 34, 41	1947 — 40, 56	1941 — 10, 10
1952 — 35, 62	1946 — 21, 22	1940 — 2, 2
1951 — 24, 28	1945 — 17, 20	1938 — 5, 5
1950 — 42, 56	1944 — 6, 6	1937 — 1, 2
1949 — 82, 118	1943 — 6, 6	— —
		419 571

SEASONAL OCCURRENCE:



51. *Automeris io* Fabr. **Io Moth**

DISTRIBUTION: Collections have been made in southern Quebec and Ontario, and in southeastern Manitoba (see Fig. 30).

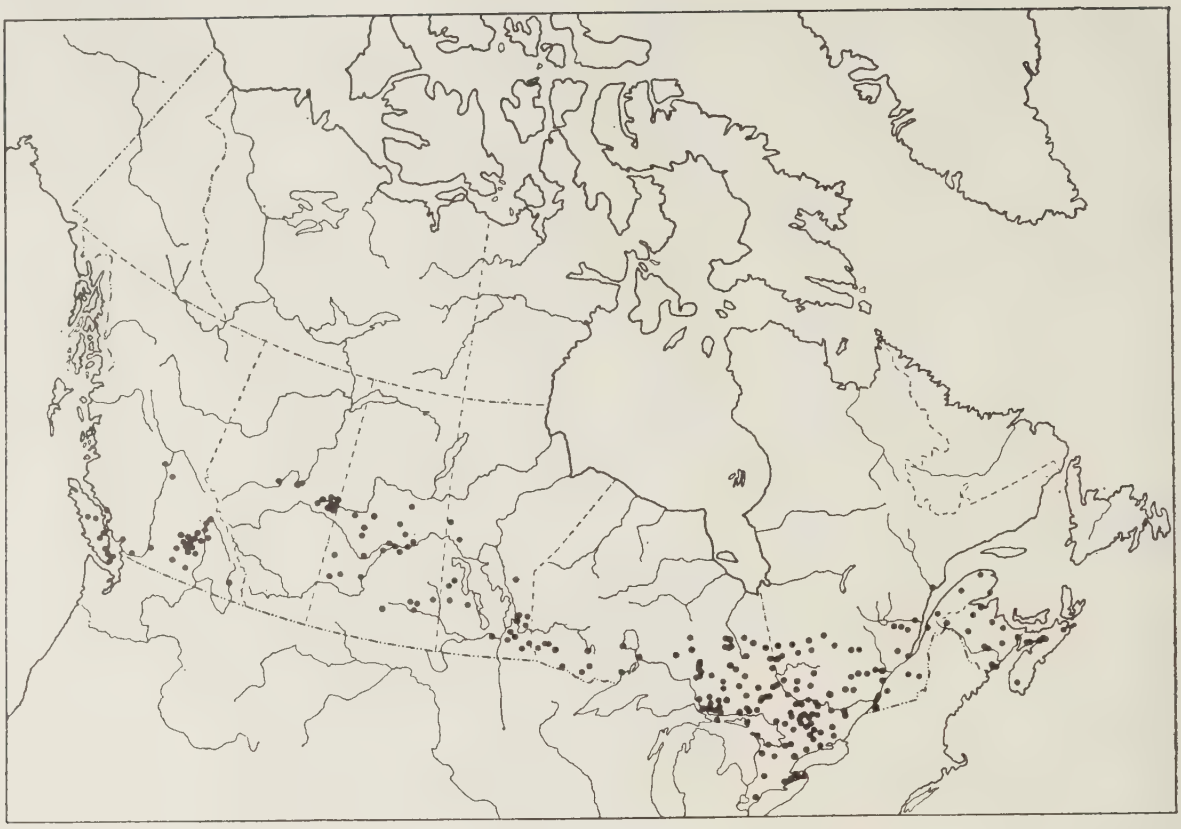


Fig. 29. Collection points for *Antheraea polyphemus* Cram.

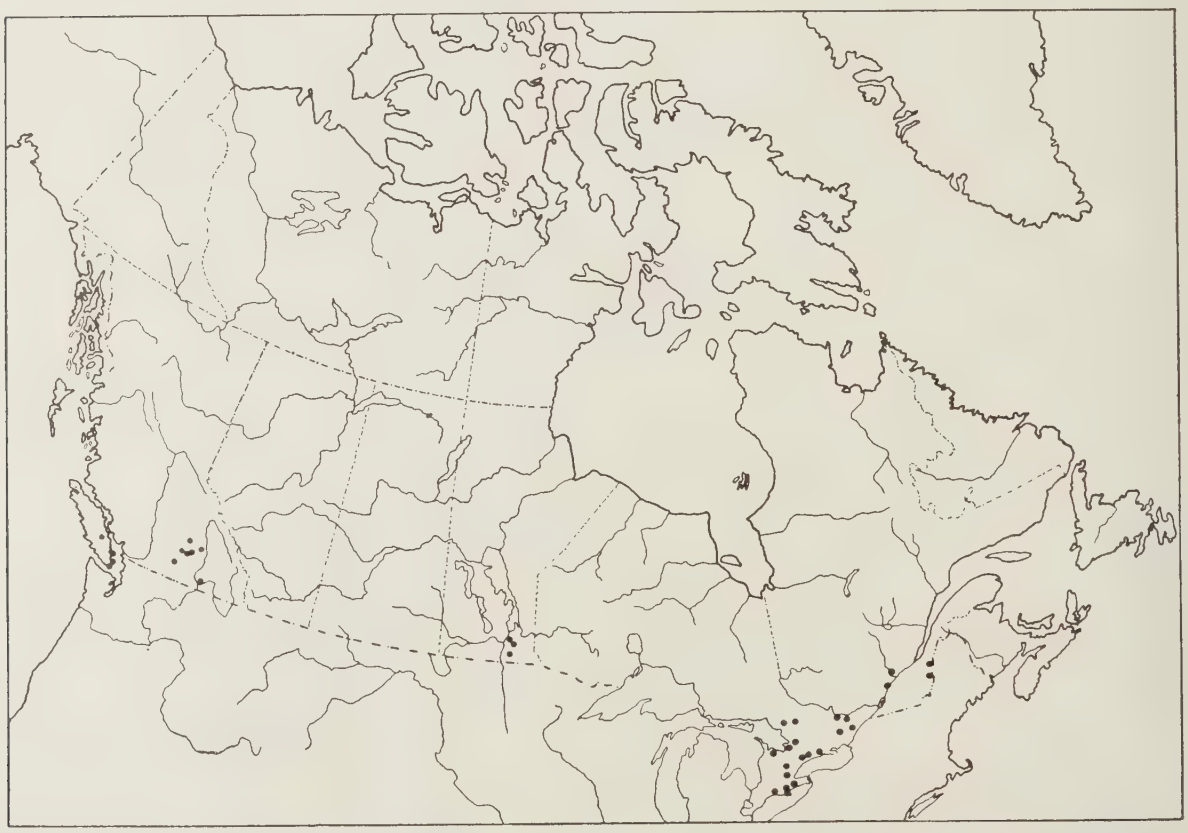


Figure 30. Collection points for *Automeris io* Fabr. in Quebec, Ontario, and Manitoba and for *Pseudohazis eglanterina* Bdv. in British Columbia.

HOSTS:

White birch	6	Black walnut	1
Trembling aspen	4	White ash	1
Elm	3	Silver maple	1
Basswood	3	Yellow birch	1
Black locust	2	Serviceberry	1
Hickory	1		

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare and in small numbers.

Summary of Collections and Specimens Received

1954 — 2, 4	1948 — 4, 7	1941 — 2, 6
1953 — 1, 1	1947 — 1, 1	1936 — 1, 1
1952 — 1, 1	1946 — 3, 3	1935 — 1, 1
1951 — 2, 4	1945 — 2, 18	— —
1950 — 3, 4	1944 — 1, 24	30 92
1949 — 6, 17		

SEASONAL OCCURRENCE:

Egg:

Larva: Mid-June to late September; somewhat more common during late August.

Pupa: Overwintering stage.

Adult: A small number of collections were made during late June.

52. *Hemileuca lucina latifascia* B. & McD.

DISTRIBUTION: A single record of this *Spiraea* feeder taken from a tree is known from Saskatchewan. The collection locality was 28 miles north of North Battleford.

HOSTS: Trembling aspen 1

The 41 larvae collected on June 25, 1949 were reared on trembling aspen until August 3rd when pupation was general. Eighteen pupae were obtained and resulted in 14 adults. Apparently satisfactory development can take place on trembling aspen.

FEEDING TYPE: A defoliator.

PREVALENCE: Rare; a singe collection of larvae was taken in 1949.

SEASONAL OCCURRENCE: The larvae were collected during late June.

53. *Pseudohazis eglanterina* Bdv.

DISTRIBUTION: Recorded from southern British Columbia (see Fig. 30).

HOSTS:

Willow	3	Birch	1
Vine maple	2	Aspen	1

Also taken from other shrubs and plants including wild rose and ocean spray (*Holodiscus discolor* (Pursh) Maxim) which are the principal hosts.

FEEDING TYPE: Colonial defoliator; solitary in late instars.

PREVALENCE: A small number of collections are received each year and frequently contain a large number of specimens as a result of the colonial feeding habit.

Summary of Collections and Specimens Received

1955 —	3, 202	1941 —	2, 2	1944 —	1, 2
1954 —	4, 165	1950 —	2, 2		— —
1953 —	2, 31	1949 —	3, 82		19 491
1950 —	1, 4	1948 —	1, 1		

SEASONAL OCCURRENCE: Larvae have been collected from mid-May to late August. Overwinters in the egg stage.

CITHERONIIDAE

54. *Anisota stigma* Fabr. **Spiny Oakworm**

DISTRIBUTION: Collected in southwestern Ontario at St. Williams, Brantford, and Hamilton, and near North Bay in northern Ontario.

HOSTS: Red oak 4

FEEDING TYPE: Colonial defoliator.

PREVALENCE: Colonies are found only rarely.

Summary of Collections and Specimens Received

1953 —	1, 30	1951 —	1, 30	1945 —	1, 14
1952 —	1, 30	1949 —	1, 100		5 204

SEASONAL OCCURRENCE: All collections contained larvae and were made betweeen mid-July and mid-August.

55. *Anisota manitobensis* McD.

DISTRIBUTION: Recorded only from the Red River Valley of Manitoba (see Fig. 31).

HOSTS: Bur oak 52
Hazel 3

FEEDING TYPE: A solitary defoliator.

PREVALENCE: Generally found in small numbers but isolated severe infestations do occur.

Summary of Collections and Specimens Received

1953 —	2, 300	1951 —	23, 246	1948 —	1, ?
					26 546+

SEASONAL OCCURRENCE:

Egg:

Larva: Mid-July to late September; predominantly during late August.

Pupa: The overwintering stage.

Adult: Two collections were taken during mid- and late June.

56. *Anisota senatoria* J. E. Smith **Orange-striped Oakworm**

DISTRIBUTION: This species is found in southwestern Ontario and along the north shore of Lake Ontario as far east as the St. Lawrence River (see Fig. 31).

Figure 31. Collection points for *Anisota manitobensis* McD. in Manitoba and for *Anisota senatoria* J. E. Smith in southern Ontario.

HOSTS:

White oak	116	Bur oak	2
Red oak	19	Scarlet oak	1
Black oak	10	Swamp white oak	1
Pin oak	6		

FEEDING TYPE: Colonial defoliator.

PREVALENCE: Occurs occasionally; subject to considerable variation in numbers.

Summary of Collections and Specimens Received

1954 — 9,	208	
1953 — 17,	808	
1952 — 23,	546	
1951 — 15,	479	
1950 — 16,	532	
1949 — 22,	721	
1948 — 18,	301	
1947 — 21,	691	
1946 — 16,	1,312	
1945 — 1,	8	
1944 — 2,	80	
—	—	
160	4,686	

SEASONAL OCCURRENCE:

Egg: A single collection was taken in mid-July.

Larva: Early July to mid-September; slightly more abundant during August.

Pupa:

Adult:

57. *Anisota virginiensis* Dru.

DISTRIBUTION: Occurs more widely and on a greater variety of hosts than the previous species with which it is closely related. Collected in southern New Brunswick, southern Quebec, south, central and northwestern Ontario; and the southeast corner of Manitoba (see Fig. 32).

HOSTS:

Bur oak	115	Willow	2
White birch	40	Hazel	2
Red oak	11	Blue-beech	1
White oak	10	Yellow birch	1
Maple	7	Hackberry	1
Beech	3	Serviceberry	1
Alternate-leaf dogwood	2		

FEEDING TYPE: A colonial feeder at least during the early larval stages.

PREVALENCE: Occurs occasionally and with a moderate amplitude of variation. Localized severe defoliation of bur oak occurs in Manitoba.

Summary of Collections and Specimens Received

1954 —	4,	12	1948 —	20,	156	1943 — 6,	29
1953 —	4,	32	1947 —	2,	18	1942 — 3,	8
1952 —	108,	1,695	1946 —	11,	48	1941 — 7,	99
1951 —	6,	505	1945 —	7,	81	221	3,198
1950 —	11,	237	1944 —	22,	155		
1949 —	10,	123					

SEASONAL OCCURRENCE:

Egg: Early and mid-June in Manitoba.

Larva: Early and mid-June.

Pupa: Early August to late September; predominantly in late August.

Adult: Early and mid-June.

58. *Anisota rubicunda* Fabr. **Green-striped Mapleworm**

DISTRIBUTION: Recorded from Nova Scotia to Ontario within the range of maple (see Fig. 33).

HOSTS:

Red maple	501	Silver maple	16
Sugar maple	174	Mountain maple	1

FEEDING TYPE: Colonial feeding defoliator.

PREVALENCE: Rare in the eastern part of its range, but common in Ontario. In all areas it may be very abundant locally, indicating a broad amplitude of variation.

Summary of Collections and Specimens Received

1954 —	79,	1,156	1948 —	77,	1,469	1942 — 10,	26
1953 —	77,	967	1947 —	132,	3,002	1941 — 13,	154
1952 —	84,	1,360	1946 —	90,	2,448	1939 — 1,	2
1951 —	85,	1,065	1945 —	55,	3,709	1937 — 1,	6
1950 —	76,	1,505	1944 —	62,	786	974	19,518
1949 —	123,	1,827	1943 —	9,	36		

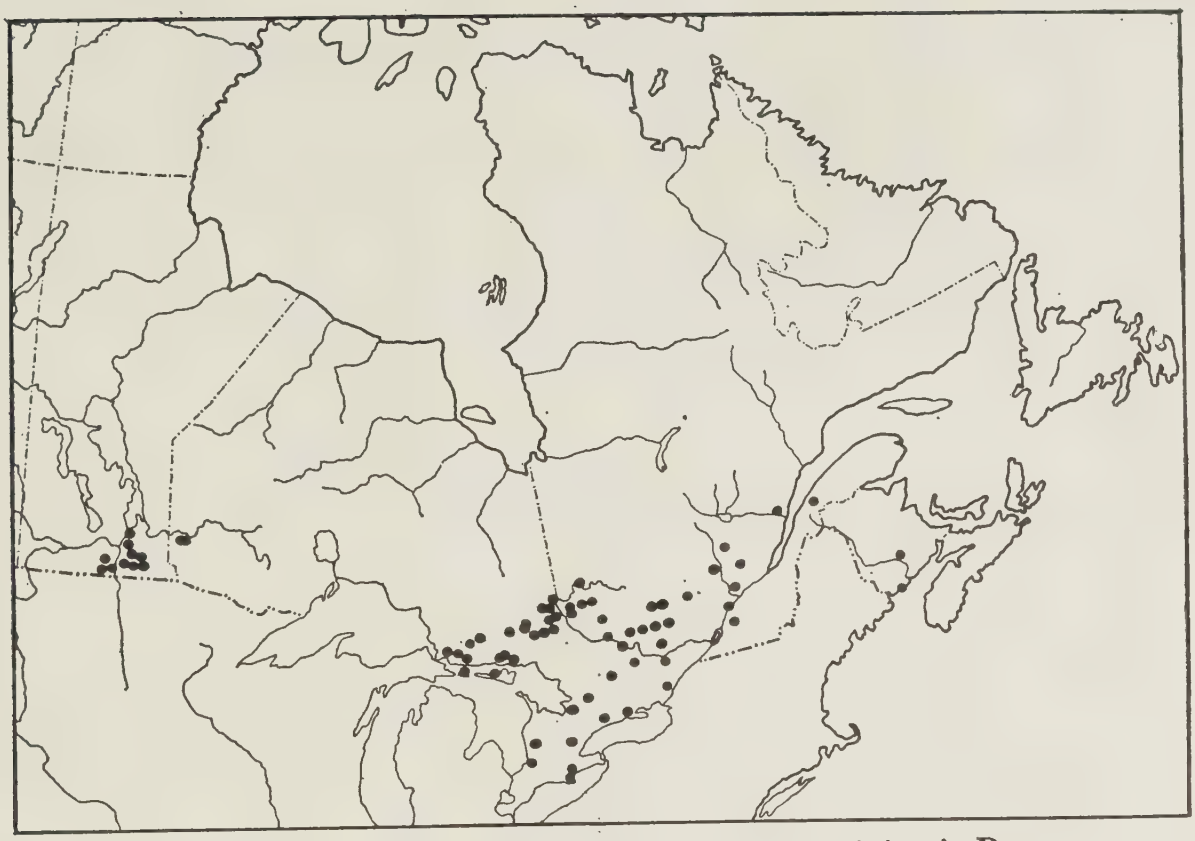
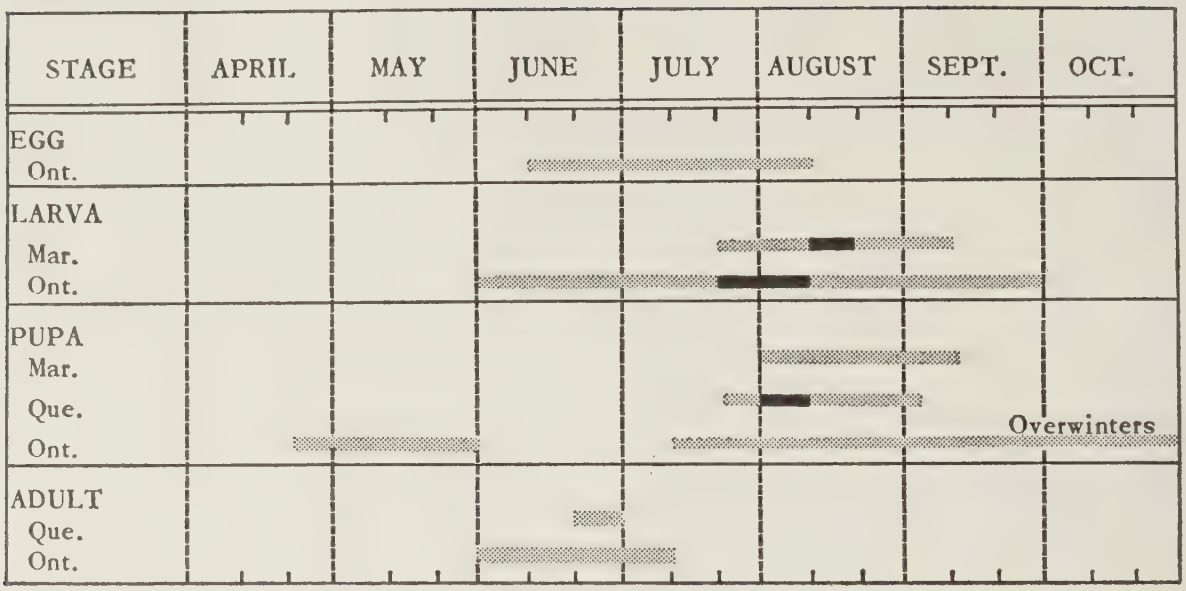


Figure 32. Collection points for *Anisota virginiensis* Dru.

Figure 33. Collection points for *Anisota rubicunda* Fabr.

SEASONAL OCCURRENCE:



59. *Eacles imperialis pini* Dru. **Imperial Moth**

DISTRIBUTION: Recorded from Ontario south of Sault Ste. Marie and Lake Timagami and in adjacent areas of Quebec (see Fig. 34).

HOSTS:

Red pine	123	Scots pine	6
Eastern white pine	102	White spruce	5
Jack pine	12		

FEEDING TYPE: Solitary defoliator.

Figure 34. Collection points for *Eacles imperialis pini* Dru.

PREVALENCE: Rare in the eastern part of the range of white pine but found commonly in south-central Ontario. Usually in small numbers but occasionally small groups of trees are severely defoliated.

Summary of Collections and Specimens Received

1954 — 17, 32	1949 — 36, 100	1944 — 5, 5
1953 — 32, 95	1948 — 24, 73	1941 — 1, 1
1952 — 45, 106	1947 — 25, 126	— —
1951 — 28, 132	1946 — 20, 36	267 756
1950 — 23, 37	1945 — 11, 13	

SEASONAL OCCURRENCE:

Egg: Mid-July to early August.

Larva: Mid-July to mid-September, predominantly during August.

Pupa: Two records for mid-August; the overwintering stage.

Adult: Late June to early August.

NOLIDAE

60. *Celama minna* Butl.

DISTRIBUTION: Collected only from Vancouver Island in British Columbia.

HOSTS: Alder 2
Garry oak 2
Willow 1

This species was reared to maturity on the above hosts, although it is generally considered to be a lichen feeder.

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare on forest trees.

Summary of Collections and Specimens Received

1953 — 1, 2	1952 — 2, 2	1949 — 2, 5
		— —
		5 9

SEASONAL OCCURRENCE: All collections were of larvae taken during late June and late July.

61. *Sarbena minuscula* Zell.

DISTRIBUTION: Collected only in southeastern Ontario.

HOSTS: White oak 4

FEEDING TYPE: Inadequate information.

PREVALENCE: Rare and in small numbers. Two collections of a single larva were taken in 1948 and in 1949.

SEASONAL OCCURRENCE: Larval collections were made in late August and early September.

ARCTIIDAE

62. *Lexis bicolor* Grt.

DISTRIBUTION: Collected from all provinces in appreciable numbers. The absence of records north of Lake Superior and in the agricultural areas of the Prairie Provinces, except for a single collection from the Cypress Hills, should be noted (see Fig. 35).

HOSTS:

White spruce	365	Red spruce	4
Balsam fir	279	Ponderosa pine	4
Douglas fir	69	Western red cedar	4
Alpine fir	47	Eastern white pine	2
Black spruce	46	Eastern hemlock	2
Jack pine	43	Western white pine	1
Lodgepole pine	42	Rocky Mountain juniper	1
Tamarack	35	Western larch	1
Western hemlock	19		
Engelmann spruce	9		

Published records indicate that this species is primarily a lichen feeder. A review of the above host records has indicated that although many cannot be proved beyond doubt, many of the collections consisted of inmature larvae that were reared on the hosts indicated for as much as three weeks before successful pupation and emergence was obtained. Although lichens found on coniferous trees may be the favoured food, this species can develop satisfactorily under insectary conditions on the trees themselves.

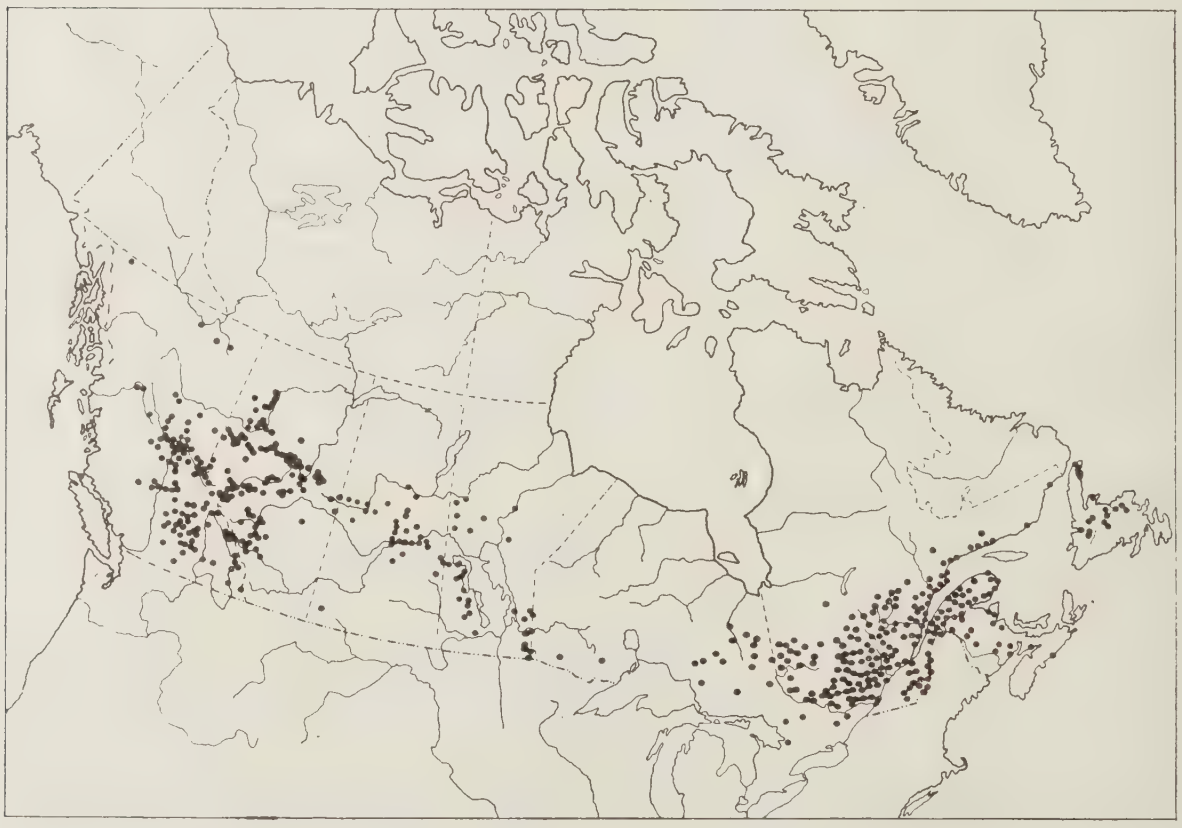


Figure 35. Collection points for *Lexis bicolor* Grt.

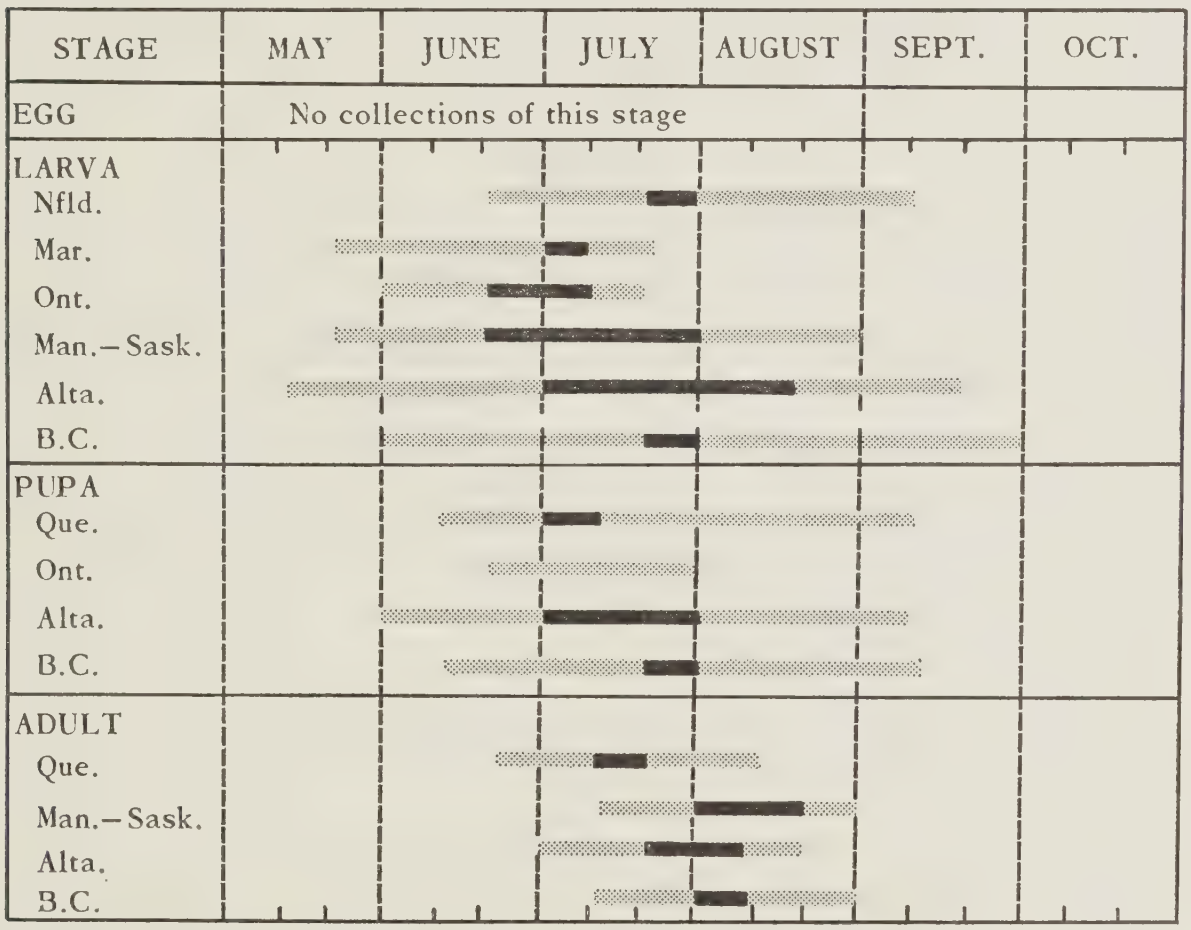
FEEDING TYPE: Solitary defoliator.

PREVALENCE: Occurs fairly commonly throughout most of the forested areas of Canada with the possible exception of parts of northern Ontario. Rarely occurs in large numbers, indicating a narrow to moderate amplitude of variation.

Summary of Collections and Specimens Received

1955 — 20,	25	1948 — 31,	42	1941 — 92,	110
1954 — 80,	133	1947 — 39,	57	1940 — 70,	92
1953 — 114,	163	1946 — 52,	68	1939 — 2,	4
1952 — 117,	167	1945 — 83,	103	1938 — 2,	2
1951 — 237,	330	1944 — 41,	52		
1950 — 104,	131	1943 — 92,	119	1,340	1,827
1949 — 98,	139	1942 — 65,	90		

SEASONAL OCCURRENCE:



63. *Clemensia albata* Pack.

DISTRIBUTION: Collected at widely separated points in northwestern Ontario, Manitoba, central and northern Alberta, and British Columbia (see Fig. 36).

HOSTS: White spruce 49
Balsam fir 7
Alpine fir 3
Western hemlock 2

FEEDING TYPE: Solitary defoliator.

Figure 36. Collection points for *Clemensia albata* Pack.

PREVALENCE: Generally rare; somewhat more common in Alberta. The amplitude of variation is narrow to moderate.

Summary of Collections and Specimens Received

1955 — 1, 1	1951 — 27, 80	1942 — 2, 2
1954 — 3, 3	1950 — 1, 1	— —
1953 — 6, 6	1945 — 1, 1	74 167
1952 — 33, 73		

SEASONAL OCCURRENCE:

Egg:

Larva: Mid-May to mid-July; most common in mid-June.

Pupa: Early June to mid-July.

Adult:

64. *Hypoprepia miniata* Kby.

DISTRIBUTION: Collected near Ottawa in Ontario, in the Boreal Region of southern Manitoba, in central Alberta, and in the interior of British Columbia (see Fig. 37).

HOSTS: Jack pine ..... 3 Engelmann spruce 2
Douglas fir 3

This species is reported to be a lichen feeder but larvae have been collected from and successfully reared on the above hosts. The Alberta collection consisted of adults obtained from lodgepole pine.

Figure 37. Collection points for *Hypoprepia miniata* Kby.

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare and in small numbers.

Summary of Collections and Specimens Received

1955 — 1, 30	1951 — 3, 3	1948 — 2, 2
1954 — 1, 3	1950 — 2, 2	1941 — 1, 1
1953 — 1, 1	1949 — 5, 205	1940 — 1, 1
1952 — 3, 3		20 251

SEASONAL OCCURRENCE:

Egg:

Larva: Early June to early July.

Pupa:

Adult: Late June to mid-August.

65. *Hypoprepia fucosa* Hbn.

DISTRIBUTION: Collected from south-central and northwestern Ontario, and southeastern Manitoba (see Fig. 38).

HOSTS:

Balsam fir	2	White oak	1
White spruce	1	White elm	1
White birch	1		

This species is also considered to be a moss and lichen feeder, but all the above host records appear valid.

Figure 38. Collection points for *Hypoprepia fucosa* Hbn.

FEEDING TYPE: Solitary defoliator.
PREVALENCE: Rare and in small numbers.

Summary of Collections and Specimens Received

1952 —	2,	2	1949 —	2,	2	1944 —	2,	2
1951 —	1,	1	1945 —	1,	3		—	—
							10	12

SEASONAL OCCURRENCE:
Egg:
Larva: Late June and early July.
Pupa:
Adult: Late July to late August.

66. *Aemilia roseata* Wlk.

DISTRIBUTION: Recorded only from the Fraser River Valley of southern British Columbia.
HOSTS: Douglas fir 1
Lodgepole pine 1
FEEDING TYPE: Solitary defoliator.
PREVALENCE: Rare and in small numbers. Single collections of individual larvae were made in 1949 and 1951.
SEASONAL OCCURRENCE: The larval collections were made during early and late August.

67. *Halisidota argentata* Pack.

DISTRIBUTION: Recorded only from southern coastal British Columbia with with the exception of one record from Mount Dalgleish near the Alaska Boundary (see Fig. 39).

Figure 39. Collection points for *Halisidota argentata* Pack. in British Columbia and for *Halisidota caryae* Harr. in Ontario, New Brunswick, and Nova Scotia.

HOSTS:				
	Douglas fir	243	Sitka spruce	2
	Western hemlock	33	Yellow cedar	2
	Lodgepole pine	21	Amabilis fir	1
	Western red cedar	16	Mountain-ash	1
	Grand fir	16	Arbutus	1
	Willow	4	White spruce	1
	Red alder	3	Oak	1
	Alpine fir	2	Cascara	1
	Mountain hemlock	2		

FEEDING TYPE: Feeds as an exposed colonial defoliator but may disperse during late instars.

PREVALENCE: A very common species with a broad amplitude of variation.

Summary of Collections and Specimens Received

1955 —	90,	7,459	1950 —	4,	7	1944 —	2, 7
1954 —	115,	11,952	1949 —	34,	47	1942 —	2, 23
1953 —	42,	1,475	1948 —	43,	185	1941 —	2, 140
1952 —	5,	8	1947 —	18,	43		
1951 —	4,	7	1946 —	2,	2		363 21,355

SEASONAL OCCURRENCE:

Egg: Known to be laid during late summer and fall.

Larva: The overwintering stage; can be found at essentially any time of year. Collected from mid-September through the fall, winter, and spring, to mid-July. Most collections, however, were made between late March and mid-June, especially in late May.

Pupa: Mid-May to mid-September; most common during June.

Adult: A single record for early August.

68. *Halisidota caryae* Harr. **Hickory Tussock Moth**

DISTBIBUTION: With the exception of a few collection records for New Brunswick and Nova Scotia, the majority are from southern Ontario extending as far north as Parry Sound, and Ottawa (see Fig. 39).

HOSTS:

Black walnut	73	Red maple	3
Butternut	40	Red oak	3
Basswood	23	Trembling aspen	2
White oak	18	Sumac	2
White elm	13	Willow	2
White birch	12	Beech	2
Hickory	10	Alder	2
Ironwood	5	Apple	2
White ash	4		

FEEDING TYPE: Colonial feeeding defoliator.

PREVALENCE: Rare in eastern Canada but common in southern Ontario. Severe defoliation has not been recorded.

Summary of Collections and Specimens Received

1955 —	19,	511	1950 —	15,	852	1945 —	13, 766
1954 —	22,	594	1949 —	13,	261	1944 —	13, 159
1953 —	18,	823	1948 —	40,	177	1942 —	1, 1
1952 —	13,	347	1947 —	23,	959	1939 —	1, 1
1951 —	36,	1,471	1946 —	31,	489		
							258 7,412

SEASONAL OCCURRENCE:

Egg:

Larva: Early July to late September; most common during late July to mid-August.

Pupa: Early and late September; overwintering stage.

Adult: Emerge in late spring; collected during mid-June and early July.

69. *Halisidota maculata* Harr. **Spotted Tussock Moth**

DISTRIBUTION: Collected throughout the entire area covered by Survey. The distribution indicated in Fig. 40 suggests that this species is somewhat more common from Ontario west.

HOSTS:

Willow	189	Red maple	3
Manitoba maple	129	Hickory	2
White birch	103	Green ash	2
Trembling aspen	69	Honey-locust	1
Speckled alder	54	Mountain maple	1
Balsam poplar	50	Lombardy poplar	1
Choke cherry	16	Largetooth aspen	1
White elm	8	Carolina poplar	1
Red oak	6	Black walnut	1
Yellow birch	6	Mountain-ash	1
Mountain alder	5	White ash	1
Basswood	5	Black ash	1
Sugar maple	5	Canada plum	1
Hazel	5	Caragana	1

FEEDING TYPE: Solitary defoliator.

ABUNDANCE: Rare in the Maritime Provinces and Quebec but common in the rest of Canada. Subject to rather broad fluctuations in abundance.

Summary of Collections and Specimens Received

1956 —	88, 461	1950 —	48, 154	1944 —	27, 73
1955 —	158, 514	1949 —	101, 282	1943 —	6, 9
1954 —	113, 373	1948 —	153, 360	1942 —	3, 6
1953 —	70, 262	1947 —	84, 137	1941 —	6, 9
1952 —	45, 81	1946 —	54, 150	1940 —	15, 29
1951 —	31, 93	1945 —	36, 167	1939 —	2, 5
					1,040 3,165

SEASONAL OCCURRENCE:

Egg: A single collection during late June.

Larva: Early July to early October; most common during mid- and late August in all regions.

Pupa: Early August to early October; most common in late August and early September; the overwintering stage.

Adult: A limited number of collections during June.

70. *Halisiodota tessellaris* J. E. Smith

DISTRIBUTION: Recorded from southern Quebec and in Ontario south of Lake Nippissing (see Fig. 41). Under this species are included a number of records which were originally designated as *Halisidota harrisii* Walsh.

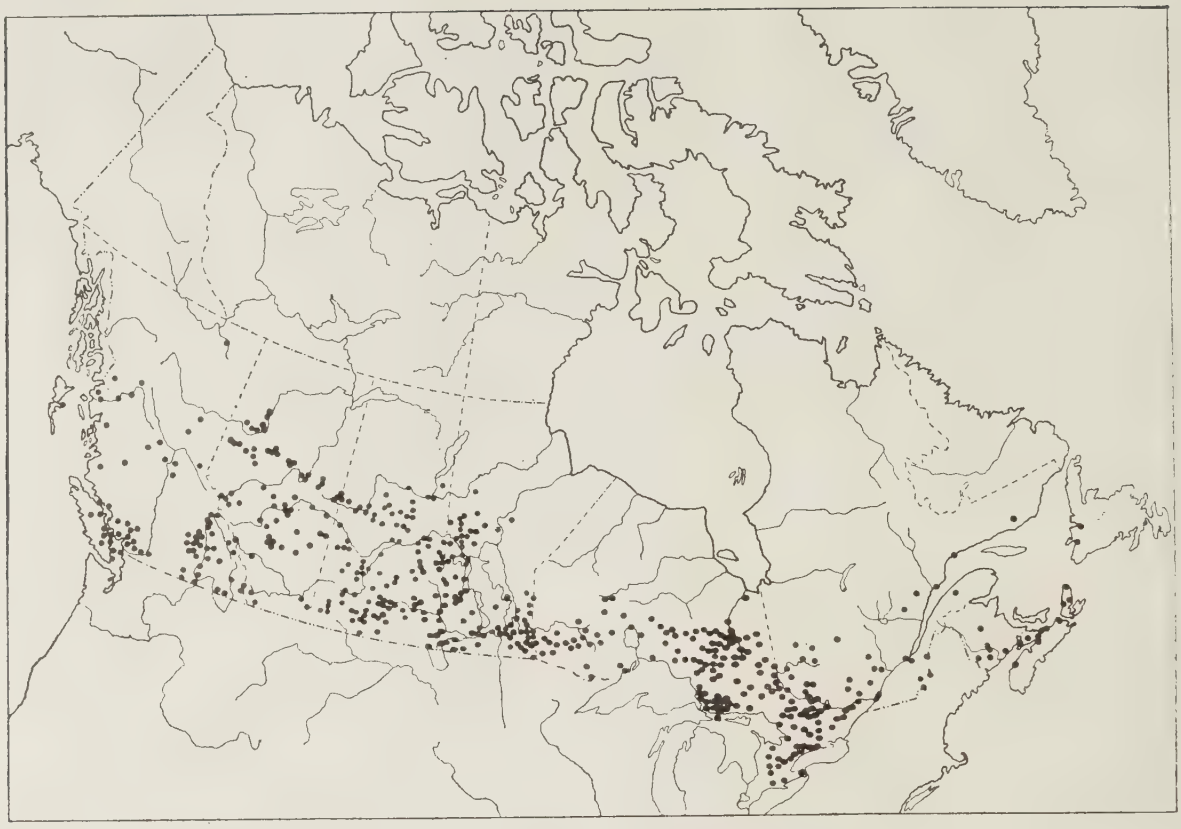


Figure 40. Collection points for *Halisidota maculata* Harr.

Figure 41. Collection points for *Halisidota tessellaris* J. E. Smith.

HOSTS:

White birch	51	Green ash	3
White elm	41	Black walnut	3
Basswood	24	Hazel	2
White oak	21	Black locust	2
Hickory	12	Red maple	2
Ironwood	8	Horse-chestnut	1
Red oak	7	Butternut	1
Sugar maple	9	Bur oak	1
White ash	9	Rock elm	1
Beech	6	Honey-locust	1
Willow	6	Manitoba maple	1
Blue-beech	5	Mountain maple	1
Yellow birch	4	Mountain-ash	1
Silver maple	4	Balsam poplar	1
Hawthorn	3	Choke cherry	1
Alder	3	Apple	1
Trembling aspen	3		

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Occurs occasionally and within a narrow range of abundance.

Summary of Collections and Specimens Received

1955 —	4,	6	1950 —	3,	5	1945 —	26,	121
1954 —	1,	1	1949 —	57,	94	1944 —	17,	38
1953 —	4,	18	1948 —	102,	216	1939 —	1,	1
1952 —	12,	32	1947 —	25,	53			
1951 —	10,	25	1946 —	33,	92		295	702

SEASONAL OCCURRENCE:

Egg:

Larva: Late July to late September; most common during late August.

Pupa: Mid-August to late September and overwinters.

Adult:

71. *Euchaetias oregonensis* Stretch

DISTRIBUTION: A single collection has beeen taken from the Boreal Region of southeastern Manitoba.

HOSTS: White birch 1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare. A collection of one larva was taken in 1951.

SEASONAL OCCURRENCE: The larval collection was made during late August.

72. *Phragmatobia assimilans* Wlk.

DISTRIBUTION: Collected from the following widely separated locations; north-central New Brunswick, east of Sault Ste. Marie and near Kenora in Ontario, and west of Lake Winnipeg in Manitoba.

ARCTIIDAE

HOSTS: White birch 1

Also collected from a number of diverse hosts, but successful development has only been obtained on white birch.

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare on forest trees; better known as a low plant feeder.

Summary of Collections and Specimens Received

1952 —	1,	1	1946 —	1,	1	1940 —	1,	1
1947 —	1,	1					—	—
							4	4

SEASONAL OCCURRENCE: Larval collections were made during August.

73. *Apantesis turbans* Christ.

DISTRIBUTION: A single collection taken in Riding National Park west of Lake Winnipeg in Manitoba.

HOSTS: White spruce 1

The habits of this rather rare species are little known but it is considered to be a low plant feeder as are other members of the genus. Development and emergence on white spruce was successful.

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare. A single collection of two larvae was made in 1947.

SEASONAL OCCURRENCE: The larval collection was made in mid-June.

74. *Leptarctia californiae decia* Bdv.

DISTRIBUTION: A single collection has been taken at Solsqua in British Columbia.

HOSTS: Birch 1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Considered to be a rare species; the collection was taken in 1948 and it consisted of one larva.

SEASONAL OCCURRENCE: Collected during late August.

75. *Diacrisia virginica* Fabr. **Yellow Woolly Bear**

DISTRIBUTION: Collected at widely separated points throughout Canada. (see Fig. 42).

HOSTS:

Willow	9	Birch	1
Trembling aspen	6	Hazel	1
Manitoba maple	3	Green ash	1
Alder	4	Cascara	1
White ash	1	Chestnut	1
Red maple	1	Lilac	1
Pin cherry	1		

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare.

Summary of Collections and Specimens Received

1955 —	12,	65	1949 —	12,	45	1943 —	2,	4
1954 —	5,	86	1948 —	18,	18	1942 —	4,	4
1953 —	4,	6	1947 —	10,	12	1941 —	3,	5
1952 —	1,	1	1946 —	6,	29	1940 —	1,	1
1951 —	3,	3	1945 —	1,	14	1939 —	2,	3
1950 —	5,	14	1944 —	7,	70	1930 —	1,	1
							97	381

Figure 42. Collection points for *Diacrisia virginica* Fabr.

SEASONAL OCCURRENCE:

Egg: Early and mid-June.

Larva: Early June to mid-October; most common during mid- and late August.

Pupa: Limited records extend over a considerable period, mid-June to late September.

Adult: June and July.

76. *Estigmene acrea* Dru. Salt-Marsh Caterpillar

DISTRIBUTION: Collected from widely scattered points from the Maritime Provinces to the interior of British Columbia (see Fig. 43).

HOSTS: Choke cherry 2
Apple 2
Alder 1
Poplar 1

The above host associations appear valid although the species is considered to be a general feeder on low plants from coast to coast. Also collected from caragana, serviceberry, and elder.

FEEDING TYPE: Solitary defoliator.

Figure 43. Collection points for *Estigmene acrea* Dru.

PREVALENCE: Rare on forest trees.

Summary of Collections and Specimens Received

1955 —	1,	1	1949 —	8,	8	1943 —	1,	400
1954 —	2,	2	1948 —	7,	8	1942 —	1,	1
1953 —	1,	3	1947 —	13,	15	1941 —	8,	9
1952 —	7,	12	1946 —	1,	1	1940 —	1,	1
1951 —	5,	5	1945 —	1,	1	1939 —	1,	2
1950 —	5,	5	1944 —	1,	1		64	475

SEASONAL OCCURRENCE:

Egg: Two collections made during early June.

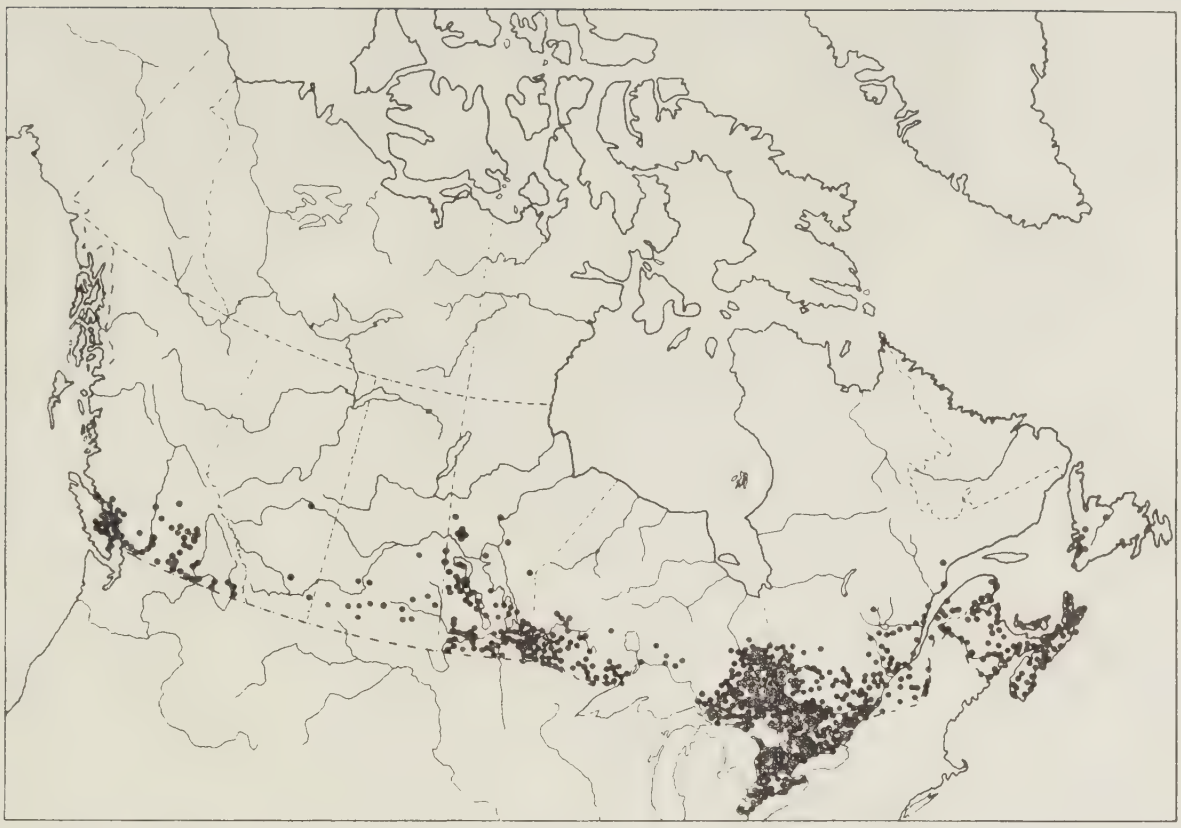
Larva: Early July to late September; most common during August.

Pupa: Inadequate information; the overwintering stage.

Adult: Early June to mid-July with the exception of two records for mid-September.

77. *Hyphantria cunea* Dru. Fall Webworm

DISTRIBUTION: Collected generally throughout southern Canada from coast to coast (see Fig. 44). Records originally designated as *Hyphantria textor* Harr. have been included under this species.



Fgure 44. Collection points for *Hyphantria cunea* Dru.

HOSTS:

White birch	466	Sugar maple	5
Pin cherry	280	White ash	4
Willow	258	Ironwood	4
White elm	201	Hawthorn	4
Choke cherry	164	Hazel	4
Speckled alder	142	Canada plum	3
Apple	120	Mountain maple	3
Red alder	78	Rock elm	3
Manitoba maple	59	Silver poplar	2
Trembling aspen	56	Silver maple	2
Balsam poplar	38	Honey-locust	2
Bur oak	11	Carolina poplar	2
Yellow birch	11	Western white birch	2
Mountain-ash	10	Black cottonwood	2
Dogwood	10	Black ash	1
Wire birch	9	Beech	1
Green ash	9	Striped maple	1
Red oak	7	Blue-beech	1
Black walnut	7	Caragana	1
Elder	7	Catalpa	1
Mulberry	6	Sycamore	1
Butternut	5	Basswood	1
Shagbark hickory	5	White oak	1

Has also been collected from a variety of shrubs including various species of *Ribes* and wild rose. Numerous collections have been taken from coniferous trees, but the records are of doubtful value.

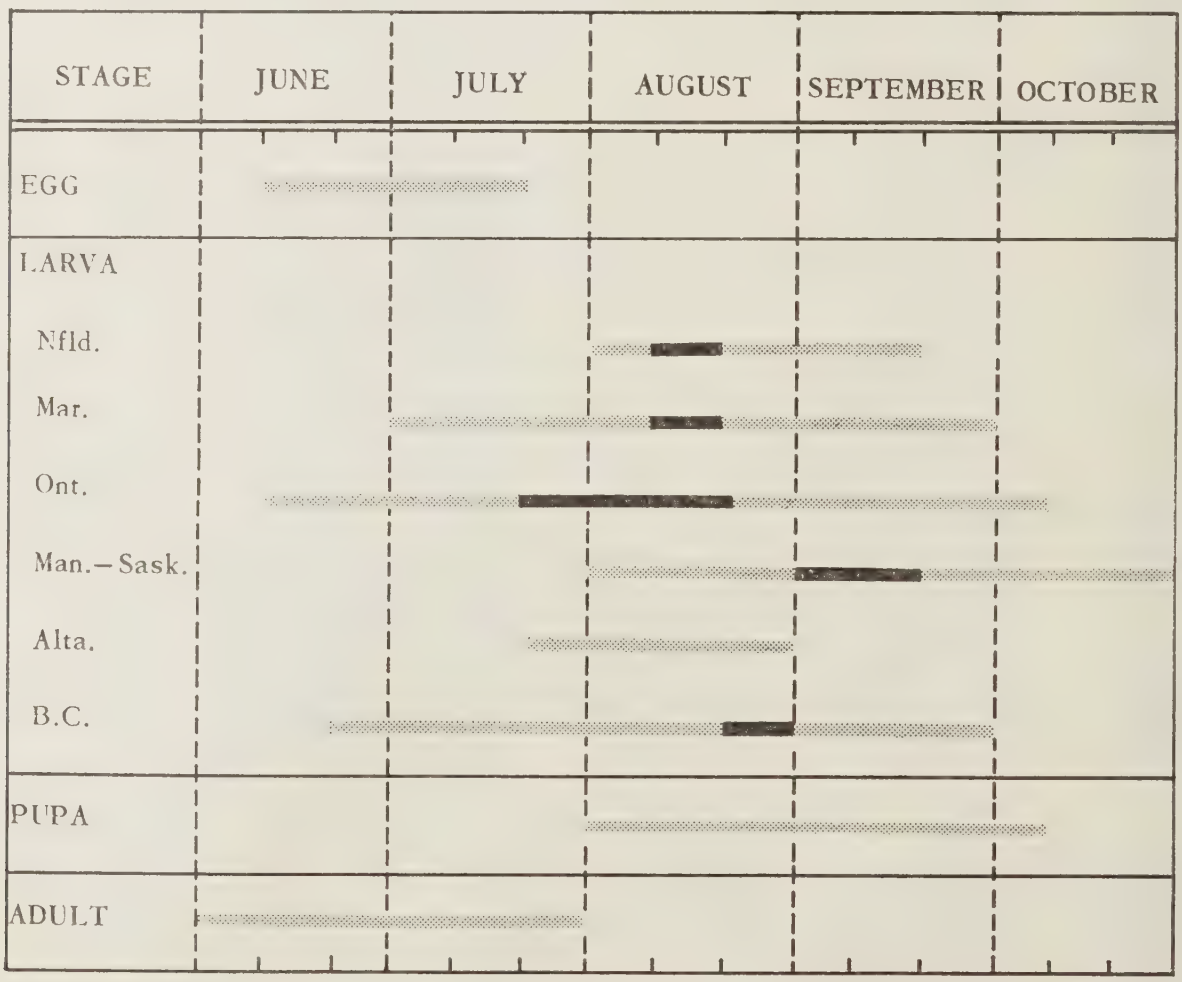
FEEDING TYPE: The larvae feed in colonies forming a distinct web over the branch of the tree as feeding progresses.

PREVALENCE: Common and varies considerably in abundance from year to year.

Summary of Collections and Specimens Received

1955 — 267,	7,898	1948 — 376,	13,716	1941 — 137,	5,760
1954 — 366,	17,180	1947 — 201,	8,269	1940 — 123,	1,743
1953 — 238,	21,108	1946 — 194,	6,961	1939 — 59,	5,114
1952 — 191,	4,698	1945 — 64,	3,565	1938 — 4,	96
1951 — 131,	4,461	1944 — 39,	2,367	1930 — 2,	54
1950 — 488,	20,981	1943 — 11,	165	——	——
1949 — 605,	17,290	1942 — 22,	648	3,518	142,074

SEASONAL OCCURRENCE:



78. *Parasemia parthenos* Harr.

DISTRIBUTION: Collected from three points in central and western Ontario and from a number of localities in southern Alberta including the Cypress Hills.

HOSTS: Willow 4
Alder 3
Birch 1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare and in small numbers.

Summary of Collections and Specimens Received

1955 —	1,	1	1950 —	4,	4	1948 —	2,	2
1951 —	1,	1	1949 —	7,	7		15	15

SEASONAL OCCURRENCE:

Egg:
Larva: Late May and September in Alberta.
Pupa:
Adult: Late June and late July in Ontario.

79. *Arctia caja waroi* B. & B.

DISTRIBUTION: Collected from the southern coastal region and the Okanagan Valley of British Columbia.

HOSTS: Willow 2
Red alder 1
Choke cherry 1

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare and in small numbers.

Summary of Collections and Specimens Received

1955 —	1,	1	1952 —	2,	2	1950 —	1,	1
1953 —	1,	1	1951 —	3,	12		8	17

SEASONAL OCCURRENCE:

Egg: A single collection during late July.
Larva: Late June and August; overwintering stage.
Pupa:
Adult: Late July.

80. *Haploa lecontei* Guer.

DISTRIBUTION: Northern Ontario, Manitoba and eastern Saskatchewan (see Fig. 45).

HOSTS: Willow 6
Trembling aspen 5
Balsam poplar 2
White birch 1
Sugar maple 1
Pin cherry 1
Choke cherry 1
Serviceberry 1

FEEDING TYPE: Solitary defoliator.

Figure 45. Collection points for *Haploa lecontei* Guer.

PREVALENCE: Rare and in small numbers.

Summary of Collections and Specimens Received

1954 — 2, 2	1949 — 4, 9	1946 — 1, 1
1952 — 2, 4	1948 — 3, 8	1945 — 2, 6
1951 — 5, 13	1947 — 3, 8	— —
1950 — 2, 9		24 60

SEASONAL OCCURRENCE:

Egg:
Larva: Mid-May to early July.
Pupa:
Adult: Mid-June to early August.

81. *Haploa confusa* Lyman

DISTRIBUTION: Collected from central and eastern Ontario and from the Boreal Region of Manitoba and Saskatchewan. No records for northern and northwestern Ontario (see Fig. 46).

HOSTS: Willow	14	White birch	3
Trembling aspen	10	Black ash	2
Balsam poplar	5	Black cottonwood	1
Choke cherry	4	White elm	1
Alder	4	Dogwood	1

Figure 46. Collection points for *Haploa confusa* Lyman.

FEEDING TYPE: Solitary defoliator.

PREVALENCE: Rare and in small numbers.

Summary of Collections and Specimens Received

1955 —	4,	6	1950 —	3,	3	1946 —	1,	1
1954 —	4,	6	1949 —	6,	9	1944 —	1,	2
1953 —	8,	53	1948 —	6,	38		—	—
1952 —	5,	19	1947 —	1,	1		51	162
1951 —	12,	24						

SEASONAL OCCURRENCE:

Egg:

Larva: Mid-April to late June; most common in May.

Pupa:

Adult: Late May to late July; predominantly during July.

82. *Haploa contigua* Wlk.

DISTRIBUTION: A single collection from Ontario south of Ottawa.

HOSTS: Trembling aspen 1

FEEDING TYPE: Inadequate information.

PREVALENCE: Rare. A collection of one larva was taken in 1953.

SEASONAL OCCURRENCE: The larval collection was made in late May.

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